

Amateur Radio

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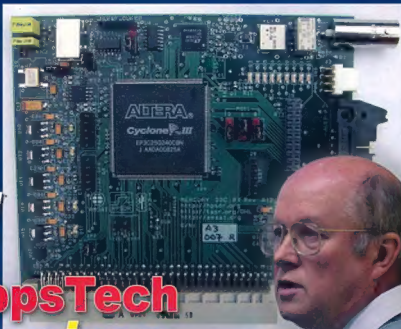
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Software Defined Radio

The Wireless Institute of Australia



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GippsTech
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plus

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power meter
build one from the
comprehensive instructions

ISSN 0002-6859



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Peter Freeman awarded G A Taylor Medal

Michael Owen VK3KI

The final award was the rarely presented G A Taylor medal. This award was first suggested back in 1981, finally being struck in Perth in 1988. The medal is presented in a wooden box, with the following inscription:

"The GA Taylor medal is presented in recognition of exceptional service to The Wireless Institute of Australia.

Major George Augustus Taylor was the founding Chairman of the Wireless Institute of New South Wales in 1910, out of which grew today's Wireless Institute of Australia. He was a pioneer in many ways; granted one of the first transmitting licences under the 1905 wireless telegraphy act (prior to 1908); he was among the first ten wireless experimenters to have been licensed by the PMG Department (1909); demonstrated that pictures could be sent by wireless (1910); transmitting the first military wireless signals in Australia (1911); conducted the

first wireless communication between moving trains (1911); was the first to fire a gun by wireless (1913)"

In presenting the medal to Peter Freeman VK3KAI, WIA President Michael Owen VK3KI stressed that while Peter had contributed to amateur radio in many ways, in particular with the annual VHF/UHF oriented technical conference GippsTech conducted by the Eastern Zone Amateur Radio Club, it was his ongoing contribution as Editor of Amateur Radio and Chairman of the Publications Committee that was being honoured. Michael paid tribute to the quality of the magazine under Peter's direction, acknowledging the ongoing pressure of deadlines imposed on those producing the magazine.

In accepting the medal Peter expressed his surprise and gratitude, paying tribute to all of the Publication Committee members who worked for the success of the magazine.



Amateur Radio

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Our Cover this month

This month's cover shows Phil Harman VK6APH during his presentation on Software Defined Radio during the *GippsTech - Special Edition* as part of the AGM weekend of activities. Phil's presentation caused lots of discussion over the weekend.

Photo by Robert Broomhead VK3DN.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National

Office (until stocks are exhausted), at \$8.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus an additional \$2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radio communication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's oldest National Radio Society
Founded 1910

Representing

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Member of the

International Amateur Radio Union

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Editorial

Peter Freeman VK3KAI

AGM weekend of activities

June is almost upon us, which means that another WIA Annual General Meeting has recently occurred. This year saw me deeply involved, as I was heavily involved in the organisation of the weekend. Not the least of this was the organisation of a Special Edition of our Club's annual GippsTech technical conference as a major part of the supporting activities for the weekend.

The GippsTech - Special Edition talks were part a "best of" and partly a deliberate departure from the usual focus, bringing in several speakers to talk about emerging topics which will certainly impact our hobby.

I thank all who were involved: fellow members involved in organising the weekend, all attendees - an event can only be a success if people attend - and importantly the presenters.

But enough of this - there are reports elsewhere in this issue which give an overview of the weekend, including one penned by myself.

One humble Editor

If you have not already heard, either via the WIA News broadcast or the WIA web site, I was very surprised at the AGM: the Board saw fit to "gong" me with the G.A. Taylor Medal. I was very surprised when Michael announced my name!

I take this opportunity to thank all who make my job as Editor a little easier, especially the members of the Publication Committee. Of course I must also thank all who contribute material to the magazine - without you, my job would be much easier - we would not have a magazine! Of particular note are the regular column contributors. But every article received is important in keeping the magazine going, and having an Australian focus.

And that comment brings me to my next comment:

Articles needed

Our stock of articles is running low. We have some still in review with the technical editors, but only a small number. The number ready for publication is at present very low.

Please seriously consider writing up your recent project or have someone

write up your club activity for possible publication. I am aware that many amateurs provide information about their projects via the World Wide Web. But please do remember the printed word - it does provide for a more lasting record of our hobby, which may be of interest to others in the future, at times when web-based materials may have disappeared from even electronic archives.

And of course, the printed word is still a more flexible medium for reading text based material. Detailed guidelines are available on the AR pages of the WIA web site - simply look for AR magazine under the Members area.

Please send any images as separate image files, NOT embedded within your text file (Word is preferred).

Coming events

The coming Queen's Birthday weekend will see at least two amateur gatherings occurring, as far as I am aware. This brings up another possibility: if clubs could decide on their event dates earlier, it would allow for better planning for many amateurs, including myself as Editor. Whilst the WIA has an on-line calendar for club events, it appears that some only publish details quite late, if at all. You never know - someone might be planning to visit your area and be willing to modify their tentative plans to fit in your club activity.

Also consider participating in the Winter VHF/UHF Field Day, later in June.

The Queen's Birthday also marks the official start of the snow season and occurs shortly after the official commencement of winter. In southern regions, many think that VHF conditions will always be flat. However, many are often surprised - one must always be vigilant for enhanced conditions.

For me, work is getting to the busy end of the semester, which means that there will be many examination papers to mark in addition to tasks related to preparation for the second semester. It also means that the annual GippsTech event is coming up soon - on the weekend of 11 and 12 July. It is always a great event, so consider coming along. Everyone always learns something new during the conference, regardless of their existing knowledge. I hope to see many at the event.

Cheers,
Peter VK3KAI

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Callsigns - again

So far as the legislation is concerned, the callsign allocated to a station is no more than a condition of the licence for that station.

But a callsign is much more than that so far as a radio amateur is concerned. It is very personal, and the identification of an individual.

For many years the Australian regulator has recognised this, and has made special arrangements to manage the callsigns of deceased amateurs.

But merely failing to renew a licence may have serious implications in respect of a callsign, particularly if it is seen as a particularly desirable callsign, for example, there are today no two letter callsigns available in Victoria.

Yet every now and then someone fails to renew their licence in time, and so loses their callsign. That caused particular concern when, after the restructuring of the Australian amateur licences in October 2005, ACMA imposed an embargo on the issue of two letter callsigns, ultimately leading to the consideration of applications for the return of their callsign by people who could point to special circumstances, and then the ballot for two letter callsigns conducted by the WIA on behalf of ACMA.

Now, if someone fails to renew their licence, their callsign will appear on the list of available callsigns on the WIA website. They then have to apply for a new licence, and ACMA will tell them to obtain a Callsign Recommendation from the WIA.

My experience of talking to many people as a result of the embargo and since then in respect of licences that have not been renewed in time, persuades me that amateurs may fail to renew a licence for all sorts of reasons.

Sometimes it is illness, sometimes traumatic personal events, sometimes because ACMA fails to link a payment to a particular licence, sometimes because the renewal notice doesn't appear, sometimes because of travel and sometimes just because it was overlooked.

So what is the position? When can a licence be renewed?

The *Radiocommunications Act 1992* has a provision that addresses that matter. It is section 129 that provides:

129 Applications for renewal of apparatus licences

(1) A licensee of an apparatus licence (other than a transmitter licence issued under section 101A, 102 or 102A or a non-foundation digital radio multiplex transmitter licence) may, at any time during the period beginning 6 months before the licence is due to expire and ending 60 days after it expires, apply in writing to the ACMA for the licence to be renewed.

The Act does not impose on ACMA an obligation to issue a renewal notice. ACMA does so, but failure to receive a renewal notice is no excuse for not renewing a licence.

But on the other hand, a licence can be renewed from 6 months before its expiry and up until 60 days after its expiry. Apart from the administrative arrangements for the renewal of licences there are other aspects that can be overlooked. Once a licence expires any continued operation of a station would therefore be un-licensed operation and the licensee may be the subject of regulatory action. Further, if for example you enter a contest or gain that long awaited DX contact while technically un-licensed, any claims would be rendered void.

The WIA has put a brief summary of the licensing process on its website, as we know that many people are confused in this area.

We also know that the service that the WIA is providing of specifying the available callsigns (up dated daily from data provided by ACMA) provides much more information than was previously available from the ACMA Register of Radiocommunication Licences on the ACMA website. The ACMA Register certainly does identify the callsigns that are currently allocated, but the fact that a callsign does not appear in Register does

not mean that callsign is available. For example, a callsign will not appear if it is the callsign of a deceased amateur during the period that callsign is embargoed without the approval of the next of kin of the deceased amateur.

Quite apart from the failure to renew a licence as I have discussed above, what about the situation where through human error a callsign is treated as cancelled, a situation where the licensee cannot be reasonably expected to have any knowledge at all?

All of this has led us to a very real awareness of what can arise.

That is why I am particularly drawing attention to the Act itself. If you are going overseas, and you are within the period of 6 months before your licence expires, why not renew your licence before you go? You don't have to wait until you receive a renewal notice from ACMA.

It is also why the WIA will not make a Callsign Recommendation until 7 full working days have elapsed after a callsign is first placed on the list of available callsigns on the WIA website.

We hope that in that time someone will notice a callsign that looks like it could be wrongly on the list. We hope that in that case the real "owner" will be told. Then, if it is "your" callsign, on the list for whatever reason, and if you immediately contact the WIA within the 7 working day period you will be able to recover "your" callsign.

The long period before, and indeed the period after expiry, during which a licence can be renewed may not be generally known, but it certainly does provide the opportunity for reasonable flexibility.

We know how important callsigns are.

If you want to keep yours, then renewing your licence in time is essential. As someone said to me the other day, he did not really want to have to pay the WIA for a Callsign Recommendation just to get his own callsign back!

We know how important callsigns are.

2009 WIA AGM and Open Forum

The WIA's 2009 Annual General Meeting and Open Forum were held at the Gippsland Campus of Monash University at Churchill on 2nd May 2009.

The AGM/Open Forum was held in conjunction with a range of activities built around the highly successful annual conference conducted by the Eastern Zone Amateur Radio Club every July, GippsTech, as GippsTech – Special Edition.

The Annual General Meeting honoured 42 WIA members who had become Silent Keys in the year since the previous AGM, but otherwise was very much a formality. The Open Forum following the AGM was the opportunity for members to learn, question and comment.

The Open Forum commenced with the presentation or announcement of a number of awards, as reported elsewhere in this issue, and then some 23 reports on various WIA activities were presented.

The President reported mainly good news, the total number of amateurs continued to grow, and the WIA's membership also continued to grow.

The following, taken from the President's Report, shows the total number of amateur licences on issue annually since 30 June 2001.

Total Amateur Licences by year

30 June 2001	15,017
30 June 2002	14,536
30 June 2003	14,363
30 June 2004	14,047
30 June 2005	14,041
30 June 2006	14,475
30 June 2007	15,009
30 June 2008	15,278
1 April 2009	15,510

The 30 June counts are taken from the ACA/ACMA Annual Reports, and the 1 April 2009 count is from the ACMA CD of Australian apparatus licences.

The break-up of the 15,510 amateur licensees as at 1 April 2009 is as follows:

Licences by Type

Advanced	11,231
Standard	2,019
Foundation	1,818
Repeater/beacon	442

WIA membership has also grown. The President's Report had the following statistics:

WIA Total Membership

31 December 2004	3,494
31 December 2005	3,851
31 December 2006	4,114
31 December 2007	4,302
31 December 2008	4,376
20 April 2009	4,581

Membership continues to grow, but not all that evenly!

During the Open Forum it was announced that particular emphasis would be placed by the Board on emergency communications during the forthcoming year, with three directors led by Phil Wait as Coordinator taking direct responsibility for this activity.

WIA RTO Fred Swainston has been asked to formulate a nationally recognised competency relevant to the provision of emergency services, so that amateurs may be nationally accredited.

The WIA website continues to attract users. Webmaster Robert Broomhead VK3DN's Report to the Open Forum disclosed the following:

In the last twelve months the website has had nine and a half million hits.

During the same period the site has served out 992 gigabytes of data, almost 1 terabyte. (Note: this does not include the weekly broadcast mp3 files)

1116 people have filled out the "contact the WIA form".

475 people signed up as members through the website.

There have been over 16,000 lookups of the available callsign database.

Each week we average 500 downloads of the weekly news broadcast files with the 128 kB version being the most popular.

There is an average of 300 downloads per month of the Foundation licence training slides with some months downloads hitting as high as 1200.

The weekend was judged a success by those participating, who now look forward to the special events of next year, the 100th anniversary of the WIA and its antecedents.

WIA appoints Treasurer

The Board has appointed John Longayroux VK3PZ WIA Treasurer with effect from 12 May 2009. John has held a licence for over 35 years, recently retiring after 32 years with the Australian Taxation Office.

He has recently been involved in assisting the Melbourne club, the Eastern and Mountain District Radio Club.

Board reappoint President and Vice President

At its meeting following the AGM, the WIA Board re-appointed Michael Owen VK3KI as President and Ewan McLeod VK4ERM Vice President for the forthcoming year.

ACMA Newsletter features WIA Contract

The April edition of ACMA newsletter ACMAsphere features a story on the new contractual arrangements between the WIA and the ACMA for the provision of amateur examinations, certificate of proficiency issue, and the administration arrangements for the management of call signs.

WIA President Michael Owen and WIA Directors Peter Young and Robert Broomhead were present at the signing of the contract with ACMA Chairman Chris Chapman on 27 February 2009. Other matters discussed at the meeting, were general spectrum management issues and the role amateurs can play in times of emergencies.

Assessments Conducted

For the period 1 April 2008 to 31 March 2009 the following assessments were undertaken:

Foundation	619
Standard and Advanced	389

The Alligator Hat

Andrew Davis VK1DA

A simple, no-solder solution to an antenna problem

When operating portable from my car on the 3.5 and 7 MHz bands in the RD contest, I found that my helical whips were tuned to the SSB section of the band and presented too high an impedance at the CW end. The high impedance caused the radio to reduce its output power significantly. This is a common problem with HF helicals, as they can have very narrow SWR-bandwidth, especially on the lower frequency bands.

I do not use an ATU for my HF antennas, so I needed a way to lower the resonant frequency of each whip, temporarily, to allow my IC-706 to produce normal power into the mobile antenna.

In my field radio case, I found a suitable piece of wire in the form of an alligator clip lead. I knotted this onto the helical whip (see Photo) and checked the SWR curve across the 7.0 to 7.08 MHz region using the IC-706 plotting function.

With the lead located close to the base of the antenna there was no effect on the resonant frequency. Moving it up a bit started to make a difference. Finally I found a point where the SWR was nicely low right where I wanted it, at about 7.015 MHz. I was then able to operate at normal power levels in the CW part of the band.

On the 3.5 MHz band, the whip's resonant frequency was about 3.585 MHz and the SWR was quite high at the CW end of the band. Again the clip lead was moved up the antenna until its resonance had been moved down to 3.520 MHz and the SWR was quite low. It took less time to do this than to describe it. The antenna was now presenting an acceptable impedance to the radio which then produced normal power on the CW end of the band.

The wire was increasing the capacitance of the antenna to the car body, and thereby changing its resonant frequency. The neat thing about this method was that my antennas remain undamaged and are still resonant on their original frequency, but any time I need to operate

on the CW end of the band, I can use this handy method to lower their frequency temporarily.

Others may find this a handy way to lower the centre frequency of an HF helical without changing its normal tuning. There would be many other ways to achieve this effect including a metal clip with attached wires. If some such capacity 'hat' was attached to the

top of the helical, the effect on resonant frequency would be more marked and a smaller 'hat' would be required. A few minutes experimentation would find the right size and orientation of wires to achieve the resonant frequency sought.

The alligator clips are incidental to this solution, of course. An ordinary piece of wire would have been just as effective.

ar



Photo 1: Alligator clip lead knotted around helical whip. (Photo by author)

My high performance multiband Delta Loop

Wayne Pickard VK2ACY

While I take no credit for these discoveries, it is hoped that the information herein will be useful for others, in their own quest, to arrive at the most suitable HF antennas within the limitations of their own location.

Further to my earlier exploits (and successes with my G5RV and homebrewed dedicated coupler unit), the need to arrive at a suitable HF antenna for working long-haul DX still remained unaddressed for some time.

As the local geography and nearby obstructions all but ruled out short path contacts with Europe, the possibility of working long path was seriously advanced up a 'notch' with the successful installation of a haul-wire atop our 20 metre gum tree. After determining that a full-sized delta loop for 40 m might then be a possibility, no sooner was the decision made than construction completed, and the antenna hauled into position.

Here then, is a description of some interesting and surprising discoveries made purely by chance, as a result.

With the apex of my 43 metre triangle of wire erected just below the 20 metre mark, it was discovered that my 1/7 hectare block did not permit enough width to extend the triangle's bottom corners adequately to achieve anything even close to an equilateral triangle arrangement. Somehow sensing that all might not necessarily be lost, I proceeded to guy off the corners and feedline which created an installation along the following lines:

43 metre (apex - up) delta loop: in the form of an elongated (tall and skinny) shaped triangular loop ($17 + 17 + 9$ m), fed close to one of the bottom corners approximately 1.5 m up the nearest vertical side with approximately 6 metres of 300 ohm solid TV ribbon. The plane of the loop was also sloped at an angle of about 30 degrees away from the supporting gum tree.

This configuration placed the bottom (horizontal wire) side of the antenna furthest from the trunk of the supporting tree, and about 1.5 metres above the tiled

roofline of the house (antenna broadcast directly facing long-path Europe).

While this was recognized as being somewhat less than ideal, curiosity got the better of me. After making a hasty telephone call to a local amateur who was due to keep a daily long-path 'sched' with his friend located in the beautiful French countryside, I tuned in on 40 m and waited. Once my presence had been confirmed by the local VK, who asked his scheduled contact to standby, I called him accompanied by a very short over, and waited expecting a negative result. To my surprise I was greeted with the warmest of QSLs from Tony F5VBY and a good 5/7 signal report!!! So there it was, maybe not a 'pile-up' busting outgoing signal, and albeit achieved on a very good QRM-free day on 40.

Nevertheless, my misshaped loop and 100 watts coupled through an old unbalanced fully manual tuner, had produced enough very low-angle radiation to pull a 5/7 from sunny France! Buoyed by this success I gave my thanks and goodbyes, QSYed and immediately worked Spain, Italy, and Sweden in quick succession. A reasonable half-hour's work for my first afternoon working 40 m long-path, I thought!

It naturally followed that even better results must be achievable with a 'properly installed' delta loop. Therefore, totally abandoning the 'leave well enough alone' principle, I found myself attempting to guy the loop's bottom corners off 'borrowed' supports located on my neighbours' properties in order to achieve the 'perfect equilateral delta loop antenna'.

Four successive attempts later, and a badly injured left knee saw the realization of my quest, and at least a month's recuperation on light duties. To my dismay over the following weeks, during conditions which varied

anywhere between excellent to poor, subsequent contacts were nowhere near as forthcoming as with the previous arrangement. It was now more than clear that the perfect looking antenna was not quite so well disposed in terms of performance.

To top it off, a sudden wind storm brought down the branch supporting my haul-rope and the whole antenna with it. I was later to learn that this was to be a blessing in disguise.

Unable to go any further with all of this due to my previously acquired injuries, I was fortunate again to get the necessary help, and a high-strength stainless steel line and pulley was installed and the antenna re-erected, this time in the original 'tall and skinny' format. Immediately over the course of that afternoon, with the antenna fed exactly as previously, good long-path contacts were made into Italy, Spain, and The Netherlands – a feat which was not anywhere as readily achievable over the several weeks previously operating with the supposedly 'ideal equilateral triangle'.

So, faced with the apparent discrepancy between theoretical 'textbook behaviours' and practically realized realities, I resolved that in this instance, both the closer proximity to the RF absorbing foliage on the tree, and the increased angle to the primary reflective boundary (that is, the tree's trunk) were significant factors in terms of affecting this antenna's low-angle performance.

In short, the antenna as it was originally and now (re)installed, was tending to assume more of the properties of a 'sloper' antenna, which are renowned for their long-haul DX performance.

But that was just the beginning of what I was to discover about my particular delta loop arrangement over the subsequent weeks.

Care and Feeding

'My Balancing Act'

When arbitrarily fed with a total of 16.5 metres of 300 ohm solid TV ribbon, coupled into a 200 ohm balanced 4:1 balun transformer, the antenna produced a measured SWR of better than 1.5 to 1 across not only the entire 40 m band, but also 20 m and, wait for it, 15 m as well! How fortuitous, not to mention useful.

However, what exhaustive on-air testing revealed was that the varying properties resulting from operating this particular antenna on these bands in this way can be effectively used to advantage in some circumstances.

40 m: Expected angle of radiation should be quite low as anticipated, however as the delta loop antenna is not generally regarded as a 'balanced' antenna, feeding this way seems (at times) to produce a slightly differing radiation angle performance to the 'unbalanced' method (see more on this below).

20 m: On this band the antenna is believed by some to operate in similar manner to a pair of collinear verticals fed in a fixed phase relationship. Therefore radiation angle is mostly higher (as evidenced by 5/6 to 5/7 contacts easily workable within VK only, which were not even detectable using other horizontal and vertical antennas available.) Some good, moderately low angle performance was also apparent, as contacts were achievable extending out to Pacific Rim countries (which were not workable on the other antennas).

15 m: As for 20 m above, however as the radiation angle appears as being somewhat higher (with the absence of any moderately low angle take-off) short-haul DX less likely even within the Pacific region, but inter-VK contacts often remarkably good.

Well, unexpectedly, the above is just what the doctor ordered for my location as exploiting these properties particularly on 20 and 15 metres has given this station the ability to often make remarkable contacts for longer periods than would otherwise be possible in the absence of the traditional high-mounted beam and rotator arrangement.

Noteworthy is the fact that 16.5 metres of 300 ohm closed TV ribbon feeder (allowing for the 0.82 velocity factor) is a half, full, and one and a

half wavelength on 40, 20 and 15 metres respectively, resulting in minimal effective impedance transformation from the loop's presenting load impedance. Total length of the RG-58 coax run from the 4:1 balun to station's operating position was 7.5 metres.

'Going unBALUNced'

The originally envisaged method of feeding allowed for a six metre length of 300 ohm ribbon connected directly to an unbalanced ATU ('earthy' side of ATU output connected to horizontal side of loop).

The ATU was positioned directly below the feeder's point of attachment to the loop. A run of some 20 metres of RG-58 coax then proceeded from the ATU to the shack's operating position. As the loop's presenting impedance was anticipated to be approximately 100 and 200 ohms on 40 and 20 metres respectively, no difficulties were encountered in achieving a match to 50 ohms, even allowing for the significant impedance transformation created by the (almost) eighth-wavelength (six metre) run of ribbon feeder, while operating on 40 metres.

Tuned bandwidth on both 40 and 20 metres was broad enough so as not to require retuning when moving up and down both these bands. During exhaustive comparison tests, notable differences were apparent, which prompted the temporary installation of a (feedline and coax) remote switching arrangement, yielding the following reproducible observations:

40 m: On this band my delta loop is used solely for working European stations long-path (and occasionally ZL which is conveniently located in the approximate broadside direction.) Over the course of numerous trans-global contacts particularly during periods of 'borderline' band conditions, switching between the 200 ohm balanced configuration, and the tuner as described had noticeable effects on whether some stations could hear me at all.

As this phenomenon started assuming the appearance of a 50/50 scenario, this ruled-out the possible effects of tuner or feedline losses as possible causes. This then led me to consider the effects of things like phase shift in tuner inductors and the like upon the all important

current distribution along the length of the delta loop, and subsequent angles of maximum radiation.

What further complicated my attempts to make sense of this, was working a station in Italy with the tuner's hot/cold connections to my loop accidentally reversed, and his then reporting that he could not hear me once I had corrected the oversight. Connections reversed again, we continued the QSO! Understandably, the switching unit was retained, for the time being, with the addition of a 'feeder-flip' switch as well.

20 m: While enjoying the previously described benefits of this antenna during inter-VK (net) contacts on 20 m, it was found that those stations which were at least one good 'hop' further away were often reporting significantly stronger signals from the delta loop when operated in '200 ohm balanced feed' mode. Needless to say, the differences in propagation angle to these contacts and/or directional differences have not been overlooked, and the ability to remotely select between feeder arrangements has opened up the possibility of comfortably enjoying otherwise unworkable contacts.

15 m: During the infrequent openings on 15 m, somewhat similar results were obtained as on 20 m, however the angle of radiation would seem to be significantly higher regardless of feeding method employed. Nevertheless, the ability to remotely change feed arrangements has led to numerous contacts being 'saved' from premature termination due to changing band conditions.

'Tuning Up'

Where opportunities for installing multiple HF antenna systems are limited, the ability to exploit the inherent properties of existing antennas and resources can often present creative solutions (for example, operating a centre-fed dipole as a 'Top-Loaded Tee' on 160 m, or shunt-feeding a tower). This fact has not been overlooked with my 43 metre wire delta loop which has also been operated as an end-fed wire on the following bands:

160 m: By connecting the normally 'hot' wire from the loop (via the six metres of ribbon) to the unbalanced ATU, this presented as close to a quarter wavelength on 160 m (that is, 'linear-loaded'). When worked

against a short piece of wire connected to an adjacent water pipe earth, this resulted in sometimes greatly improved communications with local (<50 km) groundwave contacts (compared to my normal trap-loaded 160 m inverted V, the apex of which was less than half the height of the top of the wire loop.)

80 m: Similar setup and results to 160 m above, however operating as close to a five-eighth wavelength on this band. This is perhaps the band on which this method works best, however, my normal G5RV seldom has any problems in enabling me to keep in touch with the really local 'locals' on 80 m.

40 m: Operating as close to one and a quarter wavelength on this band, the resulting radiation angle is quite high, negating the benefits afforded the really 'local' contacts on the above two bands. However, as a stand-by antenna for inter-VK and ZL contacts, it does not seem to do a bad job really.

The benefits gained from being able to use this antenna as an end-fed (linear loaded) wire were eventually found to be so useful that a dedicated 'jumper-wire' tuner was constructed on a sheet

of timber using all junkbox parts. Positioned on the lid of a plastic garbage bin and utilizing fixed inductor/capacitor settings which fully covered each band, an SWR of better than 1.5 to 1 was maintained at all times. The ability to quickly switch between my G5RV, multi-band Stationmaster vertical, and the newly commissioned end-fed loop, has done a great deal to ensure I can maintain local VK/ZL contacts under varying conditions. When the long-haul DX is not around, that is.

And ... the previously mentioned feed-method 'switch box' still remains in place, enabling me to exploit the whole repertoire of behaviours of this single piece of wire.

So that is it. One piece of wire, and multiple uses and benefits would seem to be the unexpected but pleasantly surprising outcome of this exercise. And yes, the knee is healing well despite my earlier fears to the contrary.

While I could not count the number of times it has been suggested to me to simply 'put up a tower and beam and be done with it' I would gladly do so in an instant! However, if you are in

a similar situation as myself, you will already know that this is not possible at all QTHs.

For us, the possibility of gaining that 'leg up', be it for local or distance contacts, without having to relocate (or else buy and demolish all the neighbouring infrastructure) is a definite WIN to say the least.

PS: Many thanks to all those stations who gladly and patiently participated in my on-air tests over an extended period. Thanks also to Trevor VK2COE, without whose advice and practical skills none of the resulting outcomes would have been realised.

Also, what I did not realize at the time was that my very first contact using my new delta loop was with the very person who happened to be responsible for its initial development and testing on the lower bands during the late 1960s – namely, Tony F5VBY, known then by his former callsign G3TZH. As we say here Downunder: 'Thanks heaps, mate!'

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Flyaway unit on 10 GHz or adventures on mountaintops

Jack Swart VK2TRF

In my job as a professional cameraman, I get to travel to a different destination somewhere in Australia each and every month. Before each shoot, I decide what radio hardware I will take to suit the destination.

Mostly I take an Icom IC-7000 to operate HF, VHF and UHF. More about these adventures will be revealed in an upcoming article.

When I received the schedule for the trip to Victoria in January 2009, I realised that there would be several opportunities to go looking for mountaintops for future microwave operations. Whilst checking topographic maps, I soon discovered that I would be well in range of Melbourne and Geelong, two hot spots for 3 cm operations.

After firing off a couple of emails, it became clear that quite a few VK3 stations would be willing to have a crack at a portable VK2 station in their own backyard.

Having to fly to almost all filming locations meant keeping weight and volume to a minimum, so the normal sized dishes, tripods, battery packs and spare gear all had to be left behind.

Searching through the junk box (otherwise known as the entire garage) I found a 20 cm (8 inch) dish from an old security system, complete with a split dipole feed for 3 cm. Since I always use a tripod for filming, an adaptor to hold the dish and transverter seemed the best way to go.

As I love multi tasking equipment, I used a lighting clamp to attach the system to the tripod. The five watt transverter is quite small, so the dish was attached directly to it and the tripod. The interior shot of the transverter shows the basic 200 mW unit, the PA, the sequencer, isolators and 12 V T/R relay. The extra connector on the side of the transverter is the 10 MHz reference input. Refer photo 1.

The usual FT-290 was pressed into service as the IF rig and the IC-7000 as the liaison radio. The 2 m window antenna mount could

rapidly be changed from vertical to horizontal polarisation for FM or SSB.

The final piece to the puzzle was the newly acquired GPS locked 10 MHz oscillator which simply connects to the transverter and locks the LO extremely accurately. All power for the system is 12 V from the vehicle battery.

Normally my laptop containing topographic maps and GPS receiver is an integral part of mountain-topping, but it was just too big and heavy. Paper maps had to be used instead.

All the equipment fitted in a sturdy aluminium shipping case designed for camera equipment. This had the advantage of looking like camera gear at airline check-in, avoiding any questions about the weird looking stuff inside.

Upon arrival at the first location, Anderson Hill near Loch, I put out a call on 144.100 and was almost overwhelmed by the number of responses. On 10368.100 the number of stations was such that several had to QSY to avoid interference. QSYing on 3 cm, I can tell you, is completely outside my experience!

For three hours, my mobile phone, 2 m rig and 3 cm system were going absolutely flat stick. I tried to record contacts into my log but the traffic was so busy that I have had to rely on reports from the stations I worked, to complete the data. At the end of the day, nine stations were worked. I think this is more 3 cm stations than exist in VK2!

The small dish and five watt Kuhne transverter and GPSDO worked flawlessly and made operating an

QSYing on 3 cm, I can tell you, is completely outside my experience!

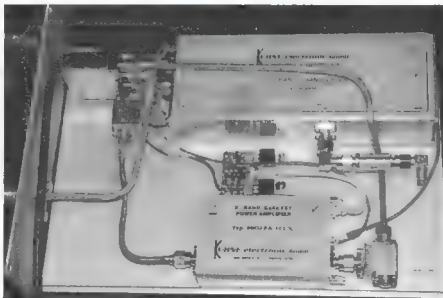


Photo 1: The VK2TRF transverter.

absolute pleasure. The unit was very sensitive and five watts output certainly makes oneself heard.

The second outing, on top of Mt Tassie was a little less hectic. I managed to work three stations on 10368.100 FM. The interesting part was that two of them were at right angles to the dish so I was able to have a three way QSO on 3 cm without any panning. Another first for this VK2.

Thanks to VK3QM, VK3PY, VK3NX, VK3TU, VK3NW, VK3NJP, VK3ALB, VK3XPD, VK3WRE, VK3YDK and VK3KAI et al.

If I have inadvertently left you out of the log, please email me and I will correct the situation.

All in all, I had a fantastic time while portable in VK3 and thanks to all those stations that participated. It just goes to show that you do not have to lug large dishes and complex gear around to enjoy 3 cm.

ar



Photo 2: The VK2TRF portable 10 GHz station, at the Mt Tassie northern site.

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Queensland's youngest Foundation Licensee: Nicholas O'Sullivan VK4FNIC

Shaun O'Sullivan VK4FY and the O'Sullivan family

This Foundation licensee is only a handful of years older than the Foundation Licence system itself.

The recently introduced three tier licensing structure has increased the number of amateur radio operators enjoying the hobby. The Foundation (entry level) qualification has proved to be extremely well received and popular. Amateur radio has a big appeal with all ages, especially with the younger generation. I myself first entered the hobby as a Foundation operator and proceeded to do the additional study and eventually proceeded to a full call (top level) qualification.

My children were curious about Dad's new hobby, and often wondered why he was stomping around on the roof, erecting these strange bits of wires and metal in the trees and surroundings. Son Nicholas showed a great deal of interest and enjoyed the occasional QSO (contact with another operator) especially if they were young, and thoroughly enjoyed Redcliffe Radio Club (RRC) family camping weekends, such as for the recent John Moyle Memorial contest.

My wife Jeanette and I discussed the requirements to get Nicholas on the air. Nicholas decided to study and sit his Foundation Licence. His Mum, being a teacher, helped Nicholas to study the material. She created a number of little info cards that were used for memory joggers and revision. Face-to-face practice also helped Nicholas to practise his on-air procedure. For a nine year old it was a major undertaking and an ambitious goal to achieve, to be one of the youngest to get a licence.

The family had planned to participate with the RRC in the John Moyle Memorial contest weekend at Murrenbong scout camp site. It is always a great weekend, out bush camping and contesting and was an ideal time for Nicholas to attempt the written and oral exams for the Foundation licence. When Jeanette

prepared and set out the study program she also decided to sit the exams as well. (If you can't beat them, join them and enjoy it).

The day arrived for Nicholas and Jeanette to sit for their Foundation licence exams. Poor old Dad was doubly nervous and worried for both of them. The wait for the Assessors to mark and review the Foundation examination papers seem to take forever.

Nicholas was called over and given his result, a pass, and jumped into the air with a mighty 'YES!' for the world to hear. His mother also passed her exams as well (perhaps we may hear a VK4FWWW on air quite soon?). Next was the practical portion of the assessment. Nicholas had studied and practised for this at home, working through the setup of Dad's

HF equipment. He breezed through most of the practical, but there were a couple of tricky areas that saw him have to study overnight and retry on the Sunday. Finally these last areas were easily completed and Nicholas had achieved his goal.

You can now hear him on the repeater in the afternoons after school as VK4FNIC, enjoying a chat.

The local TV Station also took

an interest in Nicholas, as the youngest amateur in Queensland and one of the youngest in Australia. He appeared on Brisbane Extra on 30 March with Peter VK4TAA, the secretary of the RRC, and of course his proud parents.

Amateur radio is an excellent hobby for everyone as there are very strict controls and monitoring of on air activity so there is no bad language or anti social behaviour towards any operator, only encouragement to achieve your goals.

None of this would be possible without the family spirit of the RRC and the help of a number of club members, especially the examination team - Alan, Ces, Peter, Chris and to David, Peter VK4TAA and Peter VK4EA for taking the time to participate in the TV segment!

or



Nicholas celebrates passing his Foundation Licence assessment, and becoming VK4FNIC, together with Cec Kenny VK4CF, left, and Peter Schrader VK4EA, on the right

Over to you

Dear Editor,

I have read with interest the debate regarding promoting amateur radio into the wider community

I think that an area that is also worthy of consideration is the group of prospective retirees and those who have already retired. I am of that age where retirement is approaching and I have only fairly recently become a licensed amateur operator, although I have been involved in radio for many years.

My career has been in a technical field involving many differing aspects of problem solving and project management. The job also provides an important social aspect to life. I felt that, when I retired I would lose many of the interesting technical and social attributes of the working environment and that amateur radio would fill part of the gap.

Although I am still working, the benefits of being involved in this incredibly diverse hobby are

exceeding my expectations in the aforementioned areas.

I think that there must be tens of thousands of people in our society who have similar concerns to myself regarding retirement. I can imagine that a substantial proportion of prospective retirees are searching, as I am, for ways to maintain an input into technical challenges to keep the mind ticking over and to network socially amongst like-minded people after leaving the work environment.

This age-group of people could bring a considerably varied experience to amateur radio, as many do already, and in turn amateur radio would provide them with an important socio-technical aspect to their retirement.

The challenge for us, of course, is how do we promote amateur radio?

73 Chris Simkin VK2VGA

Errata May AR

Circuit diagram error – AM detector

Regarding my AM detector article in the May issue of AR (page 11).

On perusing the circuit diagram I have noticed one error in the value of the RF stage FET 'source' resistor. On the diagram it is shown as 1.8 kohms. The correct value is actually 560 ohms.

As I have lost my original material sent to AR, I cannot recall if I was at fault but in any case the correct value is 560 ohms. The RF stage may still function with 1.8 kohms but not very well, I would expect.

Regards, Felix Scerri VK4FUQ

Magnetic loop antenna

There is a minor typesetting error that sneaked into the published article: the third paragraph under the section heading "Receiving properties" should read "...the magnitude of the electric vector is 120π Ohms or 26 dB greater..." (i.e. there is a missing π symbol between the 120 and the Ω).

Regards, Leigh Turner VK5KLT

Off centre Fed dipole (OCF)

Apologies to Ron Cook VK3AFW for failing to notice that his surname was missing from his contribution and also the Table of Contents.

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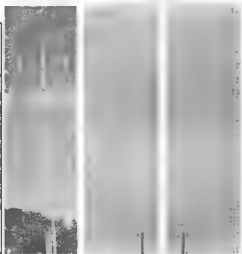
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FEED IMPEDANCE	50 ohm	50 ohm	50 ohm
Max. RADIAL LENGTH	19.7 metres	5 metres	7.5 metres
SWR	1.5 or less	1.5 or less	1.5 or less
POWER RATING	1 kW	1 kW	1 kW

A simple sensitive power meter

Paul McMahon VK3DIP

A power meter that can work at and below the mW range is a very useful tool for the radio amateur; this is one of the reasons why so many designs for them have been published. The version presented here has much in common with earlier designs with its main distinction being that it should be relatively easy and quick to build because it utilizes a pre-built module for the main PCB. It also makes the ideal detector for use with a Return Loss Bridge as it already reads directly in dB.

Rough Specifications

10 – 500 MHz, 80 dB measurement range, down to approximately -70 dBm (with offset calibration). Still usable up to approximately 1 GHz, with sensitivity and range decreasing to about -50 dBm and 50 dB respectively. Measurement in tenths of a dB with variable offset on LCD. Raw measurements sent via serial data to a PC for data capture.

Background and Design

Like many of the recently published designs for power meters, the RF bit of this one utilizes the AD8307 chip from Analog Devices. See References 2 through 6 for examples. In my prototype this IC, with very little else, produced the results shown in Graph 1.

This graph shows the DC voltage obtained out of the IC versus the input power level (in dBm or dBm) at a frequency of 30 MHz into 50 Ohms. This curve more or less replicates the data given in the AD8307 data sheet (Reference 1) showing basically a linear response from roughly -70 dBm up to about -10 dBm. For reference -70 dBm

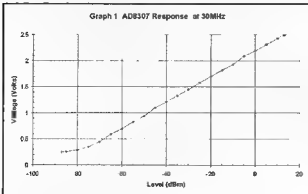
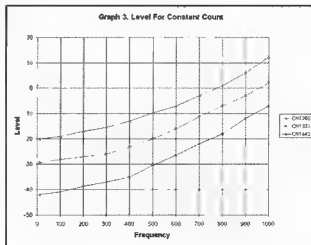
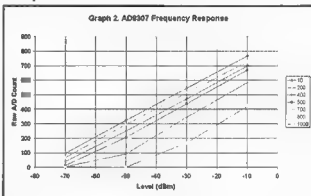
equates to about 100 pW or 70 uV at 50 Ohms, +10 dBm equates to about 10 mW or 0.7 V at 50 Ohms. This is perhaps more easily understood if we consider this dynamic range with a suitably rated 50 dB attenuator in front. In this case we would get a range of approximately -20 dBm (0.01 mW) to +60 dBm (1 kW!).

The measured slope of the linear response portion in my prototype was approximately 24 mV per dB which again is quite close to the typical value of 25 mV per dB quoted in the datasheet. The other important factor as mentioned above is that the response gets non linear below about -70 dBm (0.3 V output) and likewise above about +13 dBm (2.5 V output).

If we only wanted this meter to work at one frequency and were happy to look up a calibration curve for each measurement this could be a very

simple attachment to a multimeter. However I also wanted a means of getting the data into a PC without having to re-type it, so this design goes further, utilizing a Microchip PIC chip (16F877A). This PIC has a 10 bit analogue to digital converter and as arranged here provides both a digital display plus a RS232 serial feed to a PC.

Graph 2 shows the raw A/D converter value obtained with this setup at a



number of frequencies.

Again this graph more or less reproduces the ones in the datasheet.

As the frequency increases we can see that while the gradient stays reasonably constant the curves are effectively offset

by increasing amounts and the effective dynamic range decreases. This can be seen more clearly in Graph 3, where we see that as frequency rises we need an increasing level of signal applied to maintain a constant indicated level.

The offset effect can be more or less compensated for by using some form of LC input network as is used in References 2, 3, and 4. There are however two problems with this approach. Firstly, unless you have access to some pretty good test equipment to tweak the values you are reliant on exactly duplicating the layout used in a previous design, as well as hoping that your AD8307 is not too different from the reference one.

Secondly the price paid for the first, say, 500 MHz being fairly flat is that you do lose some overall sensitivity, as well as the response dropping off drastically above 500 MHz, making it pretty much unusable above this point.

The overall design I ended up with is shown as a block diagram in Figure 1. In this approach the device has no compensation network. Compensation is of course still required but in this case is provided for the display in the form of a variable offset (the value of which can, for example, be determined from Graph 2 or 3), or alternately applied afterwards to the data as received on the PC. In the PC case quite complex compensation schemes can be performed with relative ease.

The AD8307 is configured here pretty much as in the sample test circuit from the data sheet. The output from the AD8307 goes via a unit gain (voltage follower) buffer to one of the A/D inputs on the 16F877A. This design also utilises the feature of this PIC where two of the other A/D ports can be configured as the upper and lower voltage reference points.

Doing this gives two advantages; firstly the effective resolution of the A/D converter is concentrated in only part of the curve we are interested in (that is, the linear bit) and secondly, by making minor changes to the voltage points it is possible to calibrate out any differences in detection slope of individual AD8307s. More on this later.

In this design these reference points are set via a pair of 100 kOhm ten-turn trim pots and again buffered by voltage followers. Another A/D input port is used to set the Offset, which is subtracted from the calculated value prior to

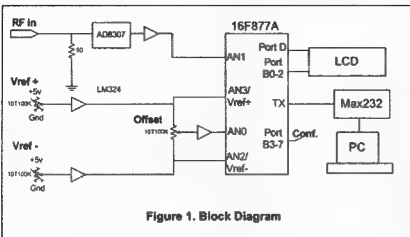


Figure 1. Block Diagram

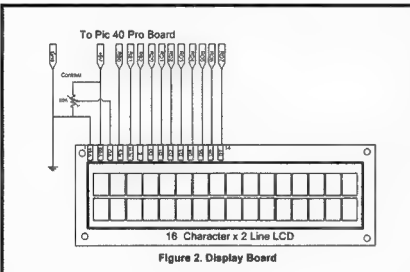


Figure 2. Display Board

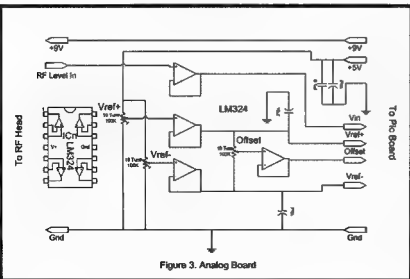


Figure 3. Analog Board

display. This Offset is set via an external pot and can be used to either compensate for frequency as mentioned above, or just to zero/set the indicated value to a more convenient point.

The PIC also drives a MAX 232 converter and provides a serial stream at 9600 baud to a PC if required to capture the raw reading. Finally there is a 2 line by 16 character display to show both the measured value and the offset.

The details of the circuitry are pretty conventional and are shown in Figures 2, through 5.

Figure 2 is a standard configuration of a 2 line by 16 character based LCD. I chose to use the slightly more efficient full 8 bit data transfer mode as there was no shortage of ports on the PIC. Also the most simplistic version of a contrast control was used; this may need to be varied depending on the actual LCD used, for example in some cases just earthing, or grounding the VU or equivalent pin may produce satisfactory contrast, and in some cases the contrast

is not variable.

Figure 3 is the DC analog processing; it uses a single LM324 general purpose quad single supply OP AMP configured as four separate voltage followers or

buffers. One of these buffers in the RF Level path provides a relatively high input impedance to the AD8307 as well as the relatively low impedance required by the A/D input port on the PIC. The

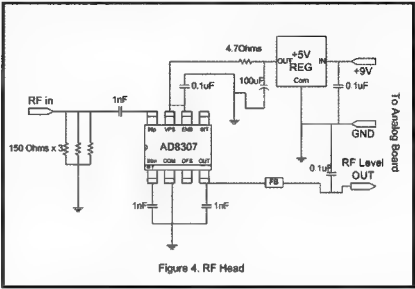


Figure 4. RF Head

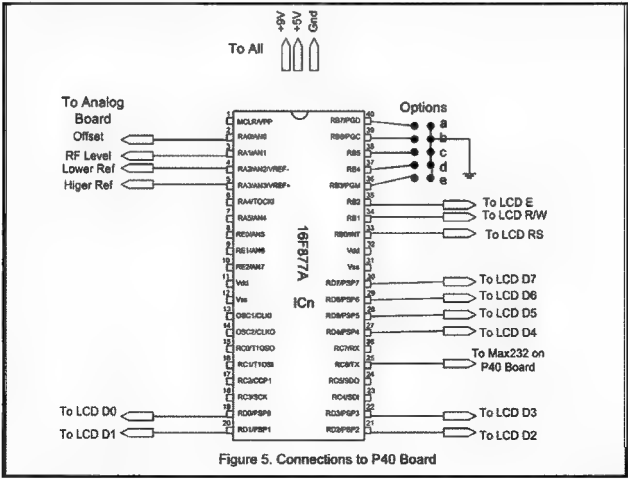


Figure 5. Connections to P40 Board

remaining buffers act to provide a similar low impedance level for the V_{ref+} , V_{ref-} , and Offset voltages. In my case I used 100 kOhm ten-turn trimmers for the reference voltages which can be set anywhere from 0 to +5 Volts, and a 100 kOhm ten turn pot for the offset which can be set anywhere from V_{ref-} to

again just about anything that would produce a clean 5 Volts from the 9 Volt or equivalent rail would be fine.

The ferrite bead was just a surplus one from the junk box to provide a little extra filtering and could probably even be left out with minimal effect. The three 150 Ohm resistors in parallel form a 50 Ohm

earth pulls that pin low. More details on what these options do can be found later in the configuration and setup section.

The PIC Code

In keeping with the simplicity of the rest of this design I also kept the code in the PIC pretty simple. For those interested in either taking this further or just having a play with PICs, I used, and can really recommend, the Basic compiler that comes with the excellent (both in value and features) package PIC Simulator IDE from Oshonsoft (Reference 8) which is also available from Dontronics (Reference 9). This total package enabled me to both produce the code and simulate its behaviour on the PC long before I actually had the hardware ready.

Rather than make this article longer than it is already I will include the source code for the PIC (along with the resultant HEX file ready to load in the PIC) in a zip file which can be obtained by either sending me an email with your return email address, or by downloading it from my web site as given in Reference 10. The basic structure of the code in the PIC is as follows:

Initialize things, set up ports to use both references, dimension variables.

Start a never ending loop.

Read the Configuration bits.

Read the Offset count.

Average out the Offset to allow for noise and the like in accordance with the configuration bits.

Read the Voltage in count.

Average out the V_{in} count to allow for noise and the like in accordance with the configuration bits.

Send the raw count out to the PC at 9600 Baud.

Subtract the offset from the voltage in.

Divide the result by either 10, 11, 12, or 13 in accordance with the configuration bits to give dB.

Display the offset and the result on the LCD.

Wait 25 ms.

Loop to 2.

You will see from this flow that depending on the configuration bits, which are set by jumpers, the PIC converts from the raw count of the A/D to a dB figure by dividing by an integer number from 10 to 13. I kept these

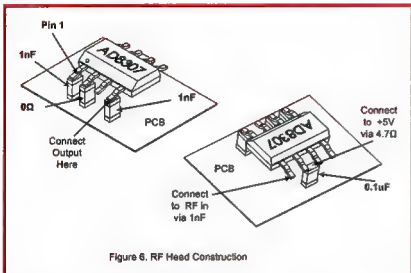


Figure 6. RF Head Construction

V_{ref+} . The actual value of these variable resistors is not critical due to the action of the buffers, so any reasonably high value (say of the order of 10 kOhm or greater) would be OK. You could use single turn devices but setting the values with any precision would be tricky. The V_{ref} values are bypassed with 10 μ F \pm 16 V or greater electrolytic capacitors to remove noise imposed on the lines by the A/D action of the PIC.

Note that due to limitations of the LM324 used, the buffers will only produce outputs between 0 volts and 3 and a bit volts; in this design however this is not an issue as there is no particular need to have any voltage greater than about 2.5 volts.

Figure 4 is the AD8307 RF head, the circuit here is basically the typical one from the data sheet. The capacitors directly associated with the AD8307 are surface mount ceramic ones while those associated with the regulator are tantalum for the 100 μ F 10 V, and green caps for the 0.1 μ F. The 4.7 Ohm resistor is a normal carbon or metal film quarter watt or greater, just used as a simple choke. The 5 Volt regulator in my case was a TO92 style LM2931 but

load for the input which is relatively unaffected by the relatively high input impedance of the AD8307. In my case these three were again surface mount but could probably be pretty much any combination giving a 50 Ohm value that was OK for frequencies up to, say, 500MHz. Note that this front load has only to be capable of handling some 10s of milliwatts, so big resistors are not necessary.

Figure 5 is the PIC part of the circuit. For this project I used an OLIMEX PIC P40 Prototype board (Reference 11) which has a socket for the PIC, crystal, voltage regulator, MAX232, and various other items already installed. The board also has a reasonably large prototyping area where additional components can be wired. Full details of the actual PIC P40 can be found at Reference 11.

Figure 5 only shows the additional connections/jumpers needed for this particular project. The 5 x 2 jumper block effectively allows port B bits 3 through 7 to be used as an option input. The software on the PIC is set up to have these pins have a pull-up to +5 Volts, so if no jumper is present the relevant pin floats high, alternately a jumper across to

and the equivalent voltage span (that is, the difference between Vref+ and Vref-) is shown in Table 1.

Table 1. Voltage Span

AD8307 Slope	Integer Divisor			
	10	11	12	13
0.0230	2.355	2.141	1.963	1.812
0.0235	2.406	2.188	2.005	1.851
0.0240	2.458	2.234	2.048	1.890
0.0245	2.509	2.281	2.091	1.930
0.0250	2.560	2.327	2.133	1.969
0.0255	2.611	2.374	2.176	2.009
0.0260	2.662	2.420	2.219	2.048
0.0265	2.714	2.467	2.261	2.087
0.0270	2.765	2.513	2.304	2.127

We saw in Graph 1 that the valid voltages out from the AD8307 by itself are between about 0.3 and 2.5 Volts. This is a span of about 2.2 volts. In Table 1, for a value of approximately 2.2 with an AD8307 slope (also as measured from Graph 1) of 0.024 Volts per dB (that is 24 millivolts) the closest match is at a span of 2.234 with a divisor of 11. Thus in my prototype I set the configuration bits up for a divisor of 11. I also started out with Vref- set at 0.3 volts and Vref+ at 2.534 volts (that is, 2.234 + 0.3). Table 1 shows voltage input span values for each of the available divisors against a range of slopes between the maximum and minimum values expected as detailed in the AD8307 data sheet (Reference 1).

By a suitable choice of divisor and setting the span (via Vref- and Vref+) it should be possible to suit any variations in AD8307 you happen to get. It is also possible to use the span to get a trade off between accuracy and dynamic range. For example if I had chosen a divisor of 12 this would have indicated a span of 2.048.

I could have then set this span over the more linear portion of the response curve, losing some more range at the lower end. The increase in accuracy comes about both from this choice of the more linear region of the curve, and also from the effectively smaller step size in the A/D converter. More about this setup side of things later but the important thing to note is that minor variations in a particular AD8307's output can be compensated for by adjustments to the span (that is, by adjusting Vref+ and Vref-).

For those interested the span values come about from the ten bits of the A/D giving 0 to 1023 possible count values. If for example the span was set at 2.56 volts then each count would be 2.5 millivolts (that is, 2.56 / 1024). If now you take the typical AD8307 slope value from the datasheet of 25 millivolts per dB, then you can see it would take ten counts of 2.5 millivolts to equal one dB (that is, 25/2.5), thus in

this case the divisor needed to turn raw A/D counts into dBs is 10.

Construction

The construction of the PIC part of this device is greatly simplified by the use of a pre-assembled PIC proto-board from OLIMEX, the PIC P40 board (available from Reference 11, and 9).

This board comes (at a very reasonable price) complete with all components (save the 16F877A PIC itself which is available from the usual Dick Smith/Jaycar type stores, as well as Dontronics). You will however have to get access to a suitable PIC programmer to program the PIC using the hex code available from me at Reference 10. This PIC P40 Proto board supports the simplest inline programmers via a header on the board so hopefully this will not be too much of a problem.

The PIC, Display and DC analog processing are quite straight forward to build. In my case I put the DC analog circuitry on a separate board to make it a bit easier to get at the adjustments. If you have suitable top-adjusting ten turn trimmers then you may, with a bit of squeezing, be able to put them and the LM324 on the blank proto area of the PIC P40 board itself.

This can all be seen in Photo 1. The small extra proto board and the plastic case were obtained from Dick Smith.

It may not be very obvious but I made extensive use of the amateur constructor's best friend after solder, that is, hot

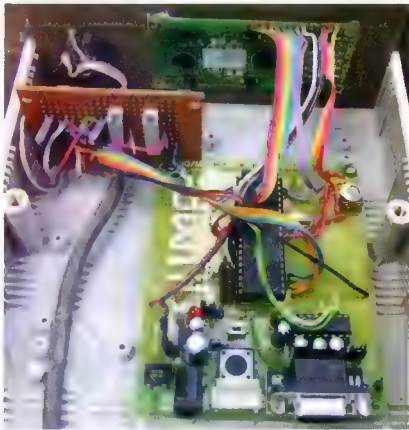


Photo 1: Inside the main case.

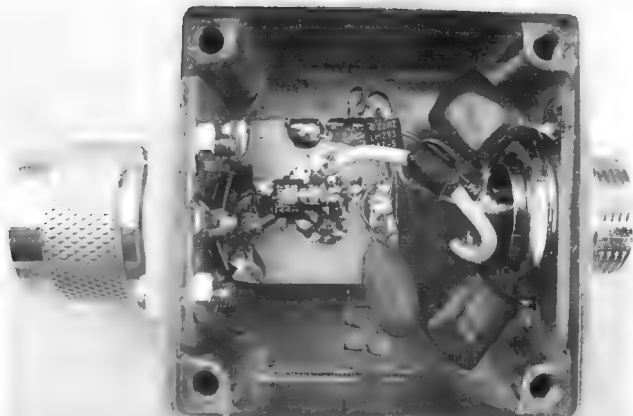


Photo 2: The RF Head.

melt glue. I used this glue to mount the various boards and the display in place, as well as providing strain relief for the cable out to the RF head.

You will note that the connectors on the back of the PIC P40 Proto board are power, programmer, and RS232. In my case the only items I added to the PIC P40 were the five way jumper block, the contrast pot for the LCD, the jumper to the Max232, and the wires off to the

other units. Do not forget, however, that you need to remove the jumper for the LED on port A0, as well as selecting the 5 V position for the regulator jumper. If in doubt the PIC P40 documentation makes it clear where these are.

The other item to construct is a little bit fiddlier, using some very small components. This is shown in Photo 2.

In my case I got the AD8307 from MiniKits in South Australia (Reference 7) and the small diecast box from Jaycar (HB5060). The surface mount components came from Rocky Electronics. (Reference 12) and the other components came from the junk box.

I used a second hand N panel mount plug bought from a hamvention

for the RF connector, and a three pin microphone connector for the power and level going back to the main unit. These components are not particularly critical and within reason whatever connectors you have will probably suit.

The RF head is formed from three small pieces of blank PCB, two are placed between the connectors and the box so as to make soldering to earth possible, and the third has the AD8307 on it.

The construction of the actual small bit of blank PC with the nominally surface mount AD8307 on it is probably the most physically difficult part of the construction process. The technique I used is related to the 'dead bug' style of construction.

While classic 'dead bug' has the IC on its back with its legs in the air, the technique here is more like 'live bug on stilts'. This technique is much more suitable for small surface mount components. Hopefully Figure 6 (which I thank my son Peter VK3FLIP for

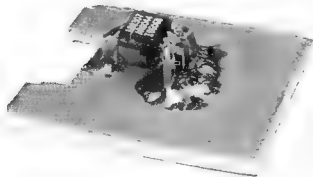


Photo 3: The RF head showing 'live bug on stilts' construction.

components. Hopefully Figure 6 (which I thank my son Peter VK3FLIP for drawing) makes this a bit clearer.

Start with a blank piece of PCB, the copper surface of which will be earth. The first surface mount component is soldered by one end to the board. One end of the component is to the board, the other is pointing up. Here I used a zero Ohm link which will ultimately go to pin 2 of the AD8307 as the first component. The AD8307 is then placed carefully and soldered with a quick touch of the iron to the top. For both these operations a small pair of tweezers is invaluable.

Once these first two connections are done the rest are relatively simple with the slight amount of spring in the AD8307 leads acting as mini clamps to hold the other components in place between the IC and the board while soldering. The tweezers and very fine solder will still come in handy however.

The real thing is shown in Photo 3. Note the small cut out nibbled from the PCB was, in my case, so as not to foul the centre pin from the RF connector.

The completed unit is shown in Photo 4.

Test and Calibration

After construction and programming of the PIC, connection of a suitable plug pack or equivalent, and powering it up you should see something displayed on the LCD.

If not there are two possibilities, the first and best is that the contrast is set too low, try adjusting it from one extreme to the other and hopefully finding a spot where it is acceptable.

If the second possibility is the case and it still does not produce something on the display then it is down to checking all wiring and so on until it does.

Given that you have got something on the display (and that you have left all the newly added five configuration jumpers open) you should be seeing something similar to that seen in Photo 4.

The first line saying Offset: followed by a number, and the second line saying Value. The next step could be to connect the RF head up to your signal generator and, with a multimeter, test to obtain similar results to Graph 1.

A simpler way is to just assume your unit will work similarly to mine and moving your multimeter to either the Vref+ or Vref-, set these voltages to the same figures as mine, that is, Vref- = 0.3, Vref+ = 2.534.

The jumpers A and B (on port B7 and 6 respectively) should also be set to a divisor of 11 as per Table 2a, that is,

there is a jumper on both positions A and B to earth.

JumperA	JumperB	Main Divisor
Out	Out	12
Out	In	10
In	Out	13
In	In	11

Table 2a: Divisor setting

JumperE	Display
Out	Normal
In	Diagnostic

Table 2b: Diagnostic setting

JumperC	JumperD	Vin Averaging	Offset Averaging
Out	Out	8	16
Out	In	2	4
In	Out	4	8
In	In	1	1

Table 2c: Averages setting

This can be checked by putting a jumper in position E (Port B3 to earth) and putting the unit in diagnostic mode so that the display on the first line now shows the offset, the divisor and the averaging selected (Table 2c). The offset should change as you vary the main offset control with the net value being shown on the second line.

At this point you may care to adjust the averaging down a bit to make the display more responsive (Table 2c), but if you end up with a display varying too widely with nothing

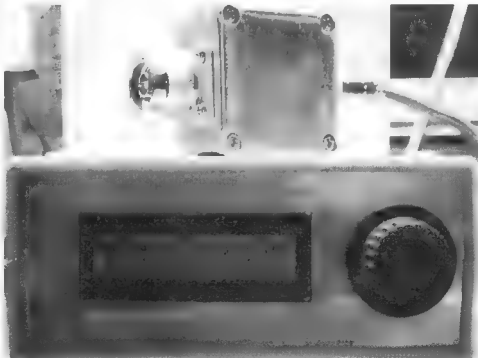


Photo 4: The completed unit.

connected to the RF head you may have a noise problem to track down.

Now is a good time to check the serial output stream. The simplest test is to connect up the meter to the PC (a serial mouse extension cord does the job well) and start up Hyperterm from the accessories program menu. Set the speed to 9600 baud 8 data bits no flow control and the port that you connected the cable to and you should start to see a series of v1 = some number lines coming up on the screen.

You could at this point remove the jumper at E and, just leaving the device as is, start using it; depending how close your version is to mine all is probably not too far off.

To obtain higher accuracy you could, as previously stated, do the repeat of Graph 1 with your multi-meter and recalculate the Vref values according to the method mentioned in the PIC Code section, setting the jumpers accordingly if you decide to change the divisor.

Another way is to set up your signal generator at roughly the mid band point of your range of interest, say 100 MHz, and set it at 10 to 20 dB above where you start to see the display move.

At this point you can either zero the display using the offset, or just remember the number displayed. Then increase the output level in whatever steps the output attenuator of your signal generator allows, say 10 dB, and you should see the

display go up by approximately this step size for perhaps another 60 dB.

If it is spot on then all is good and you can leave it, if not carefully adjust Vref+ to achieve the correct value on the display.

For example if you set the signal generator for 50 dB higher than the point you zeroed the display using the offset, then you should see approximately 50 dB on the value display.

If not adjust the Vref+ value using the appropriate trimmer until the reading is spot on 50 dB. These steps of setting the signal generator output down to about 10-20 dB above the noise, setting zero on the display, and then stepping up to say 50 dB higher and adjusting the Vref+ to obtain 50 on the display can be repeated a couple of times if necessary.

This process will quickly settle in on a Vref+ value which is right for your device.

Usage and PC Software

Finally some words on usage and a simple utility I produced to collect the data produced on a PC.

A close look at any of the graphs in this article will show that while the response of this meter to level at a particular frequency is pretty linear, it is not perfectly so. Similarly while just changing the offset at different frequencies comes close to compensating, this also is not perfect.

Even if the meter was perfect very few amateurs would have access to a signal generator that was equally perfect, so the only practical way to handle this is to calibrate the pair together.

To do this you basically need to do your measurements twice.

For a simple example assume that you wanted to measure the gain of a preamplifier over the range 100 MHz to 500 MHz. Firstly you do a measurement run with your signal generator connected directly to the meter, carefully recording your results at the various frequencies. In an ideal world these readings would all be the same, an effective 0 dB. Secondly you repeat the measurement with the preamplifier you wish to measure inline, again recording the values obtained at each frequency.

The final result can be found by subtracting the first set of values from the second. Say you had your signal generator set at 0 dBm and that on the straight through pass at 100 MHz you measured -0.5 dBm (that is, either the signal generator or the meter is a bit low at that frequency). With the preamplifier in at the same frequency and signal generator setting you measure say +11.6 dBm, then the real reading would be 11.6 - (-0.5) or 12.1 dBm.

A similar mechanism can be used with the dBm meter as the detector on a Return Loss Bridge. In this case, within limits, this compensation technique also

Figure 7: Screen capture of the PC capture program.

works to calibrate out frequency effects in your RLB. This simple subtraction technique is not perfect as it assumes that the detector response is a perfect log one across various signal levels. It can be made better however by doing a series of additional measurement runs keeping the frequency constant while varying the levels.

Doing all these measurements and physically writing down the results obtained can take a lot of time and is prone to human error. A better way is to capture the results directly on a PC and put them into a spreadsheet like MS Excel where the various calibration tasks can be done very simply. To facilitate this I produced a simple utility that runs on a PC, the main screen of which is shown in Figure 7. This data capture program is written in VB5, and I will include the source and executable for it in the distribution. If you haven't got the VB5 Runtime you may need to get that also, if you get messages about missing files when you try and run it.

Using the software on the PC is straight forward:

Copy the executable (dipread.exe) and the mscomm32.ocx to some convenient directory on the PC.

Try running dipread, if it does not run you will need to get the VB5 runtime files (see Reference 13).

Connect the power to the PIC board, and using a straight serial cable, such as a serial mouse extension cord; connect up to a free communication Port on the PC/laptop.

In dipread select the correct comport, and the speed of 9600, using the radio buttons on the right.

If all is OK you should start to see the raw and estimated values in the Dependent Value Read area getting some data.

Using either the browse button or by just typing in a file name in the 'Save Data To' box select/create a file to save the captured data to.

You can set the Dependent value name if desired as well as setting the average value (for example '5' means average the value over five readings) and the dBm Divisor (set to the same value you set via the jumpers) so as to give you a rough dBm value in the Est. dBm line.

The two independent value areas are purely there to save typing work, each time a value is read from the meter and written to the file (using the write

values and step button) the two values in the independent variable areas are also written.

The From, To and Step Size fields in the independent variables areas control what these values are and how they are incremented.

When you have finished collecting data just click done, and you should be able to open the saved file in a spreadsheet or whatever as it is just a comma separated format.

Typical use might have dependant variable one; Name = Freq (MHz), From = 100, To = 200, Step = 10. And dependant variable two; Name = Level (dBm), From = -50, To = 10, Step = 10. Assuming the count read from the meter was 200 then the first record written in this case to the file (when the write button was clicked) would contain (after the headings) 100,-50, 200.

The second click, if the count from the meter had not changed, would read 100,-40, 200, and so on cycling through the second dependant variable as many times as needed (each cycle of the second dependant variable increments the first) until the first dependant variable had completed one cycle.

This mechanism, as you may have guessed from the names, can be used to manually tell you what setting you should have on say your signal generation. Capturing then becomes a case of setup for the initial measurement, click write, set the signal generator to the new values indicated and click write, and so on until done.

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10/. Send Paul McMahon VK3DIP an email request at pmvk3dip@bigpond.net.au and I will send you a reply email with the source and hex/executables for all the code mentioned in this article. Alternately the files can be downloaded from <http://mywebsite.bigpond.net.au/pmvk3dip/>

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12/. Rockby Electronics. <http://www.rockby.com.au>

13/. VB5Runtime.

The VB5 runtime files are available from www.Microsoft.com, in knowledge base article 180071, alternately search for Msvbvm50.exe and it will be found on a number of sites. Just run the exe to install.



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A solar powered ham station

Rob Norman VK5SW

There is an interest, nowadays, in various alternative forms of power but the most popular for amateur radio operators would have to be solar power.

The problem, however, is that I do not know much about it but I can share with you what I do know. I have been operating my 'solar station in the bush' for a couple of years now and it has been working very well, although my situation is probably a little different to most, in that we use our property as a 'getaway' and we're only there for a few days each month or so, and therefore the demand on the battery is infrequent.

There are basically three components to a solar installation: the solar panel, the battery and the controller, to regulate the current going into the battery. It is basically that simple.

The sizes of these depend on the amount of current you need to draw from the battery and the duration. Once you work out these two requirements, you are able to figure out the capacities of the three components.

In my case, for example, I operate CW on HF, so the current draw on the battery would be about 20 Amps or so, although I only run the radios at about 75% of full power, that is, 75 watts. So, let us say the current demand is about 20 Amps anyway.

If I was to run the transmitter for one hour, it would mean that the battery has used 20 AH (Amp Hours) in that one hour period. Batteries are rated in terms of their voltage and the number of AH that they can supply. However, batteries used with solar panels need to be of the 'deep cycle' type.

They should only be discharged up to and no more than about 20% of their capacity. If, for example, you have a 100 AH battery, it should not be discharged by more than 20%, that is, 20 AH, so that 80 AH of

the battery's capacity should still be available.

The battery I use has an AH rating of 670 AH. 20% of that is approximately 130 AH. So, I am able to draw that amount, 130 AH without harm to the battery. Most people would think this to be 'overkill' but I tend to do this sort of thing. Therefore, if the transmitter was to run for six and a half hours, at 20 Amps, the battery would be down to the allowable 'discharge level'.

There are many different types of batteries available nowadays, but I bought a lead acid type, made by Exide in the USA, because it is a proven and reliable type of battery, old technology.

It consists of two volt cells in series to form six volt batteries, two of which make up the 12 volt supply. A battery this size can power a small house but you would need a number of panels to recharge the battery due to the

regular current drain by house hold appliances.

They are not cheap, this one cost \$1500 a couple of years ago and the expected life is about 10 years if looked after properly. The voltage at the battery fluctuates with the current coming into it from the panel. It may swing from 12 volts or so of a night to 14.5 volts or so in the daytime. I have three different radios that I have used with this battery and the voltage swing doesn't seem to affect them.

The amount of charge going into the battery is dependent on the size of the panel, its direction towards the sun and the availability of sunshine. Since we are not at the radio QTH all the time and drawing current, the battery does not need to be charged quickly on a regular basis.

One 80 watt panel is sufficient for my needs, that is, to keep it charged. It is made by BP and cost nearly \$700. The



Photo 1: A view of the solar powered station featuring the heavy duty, deep cycle batteries used.

direction that the panel faces is important to maximise the exposure to the Sun. Also, the angle to the horizontal should be optimized to ensure that the Sun hits the panel as near perpendicular as possible throughout the year. High tech ones track the sun!

The 'charge controller', or 'regulator' ensures that the right amount of current from the panel is fed to the battery. When there is a large current drain from the battery, the regulator will allow maximum current to flow into the battery from the solar panel.

With the panel shown, a maximum current of nearly five Amps can be produced with a cloudless sky. When the battery is nearly fully charged, only a small amount of current is sent to it. The maximum Amp Hours this panel can manage at this QTH seems to be about 35 AH or so a day.

When buying the battery and panel, the sales people will sell you the appropriate controller as well.

The charge controller is able to tell you a lot of information, for example, the amount of current going into the battery at the moment, the number of AH already gone into the battery since a certain time each morning, the total AH sent to the battery each day, and more.

The other consideration is the wires connecting components. To reduce voltage drop, ensure that you use heavy gauge wires and also use fuses in the main lines.

Ask the sales people questions, they want your business.

I hope this is of help in building your own solar powered station. You can see mine at www.VK5SW.com



Photo 2: The solar panel used – the source of the power to replenish the batteries.

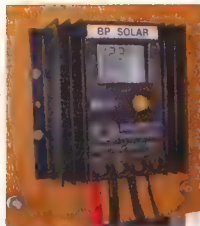


Photo 3: The PL-20 solar controller.

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Michael Owen VK3KI

The WIA's 2009 Annual General Meeting and Open Forum was held at the Gippsland Campus of Monash University at Churchill on 2nd May 2009.

The AGM/Open Forum was held in conjunction with a range of activities built around the highly successful annual conference conducted by the Eastern Zone Amateur Radio Club every July, Gipps Tech, as Gipps Tech "Special Edition"

The Annual General Meeting honoured 42 WIA members who had become Silent Keys in the year since the previous AGM, but otherwise was very much a formality. The Open Forum following the AGM was very much the opportunity for members to learn, question and comment.

The Open Forum commenced with the presentation or announcement of

a number of awards, and then some 23 reports on various WIA activities were presented.

The President reported mainly good news, the total number of amateurs continued to grow, and the WIA's membership also continued to grow. Responsibility for certificates of proficiency and the recommendation of call signs, had added to the workload of the office, and helpers were needed.

During the Open Forum it was announced that particular emphasis would be placed on emergency communications during the forthcoming year, with three directors led by Phil Wait as Coordinator with WIA RTO

Fred Swainston to formulate and accredit amateurs gaining nationally recognised competencies relevant to the provision of emergency services.

WIA Director Ron Bertrand was an apology, having become ill just before leaving home to come to Churchill, but all the other Directors were present, and received much valuable feedback, both formally and informally during discussions over the weekend.

The weekend was judged a success by those participating, who now look forward to the special events of next year, the 100th anniversary of the WIA and its antecedents.

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WIA announces 2008/2009 Awards

Michael Owen VK3KI

A number of awards were announced at the Open Forum following the WIA's Annual General Meeting on 2nd May 2009 at the Gippsland Campus of Monash University at Churchill.

Three awards announced are awards presented on the recommendation of the Publications Committee, of which two are directly related to the magazine Amateur Radio.

Al Shawsmith Award

The Al Shawsmith Award was awarded to John Sparkes VK6JX for his article "DX Chasers Club - Faure Island DXpedition, 2008" published in November 2008 AR.

AR Technical Award

The AR Technical Award for the best technical article was awarded to Ron Sanders VK2WB for his article "A balanced antenna matching unit" published in April 2008 AR.

Higginbotham Award

The Higginbotham Award was awarded to Graham Ratcliff VK5AGR for his long contribution to amateur radio as the National Coordinator of AMSAT-VK, promoting the amateur satellite service.

This year the Board sought the advice of the Advisory Committees before deciding on the other WIA awards.

Ron Wilkinson Award

Stan Bourke VK2EL was awarded the Ron Wilkinson Award. The inscription on the certificate reads "In recognition of his contribution to amateur radio and the WIA for over 60 years as a technical innovator, the provider of technical support for his Division and WICEN, as a supporter of his club and as a trainer and Assessor of amateurs."

President's Commendations

President's Commendations were announced for Peter Weeks VK3YZP for his work in WICEN over many years. Mark Dods VK3XMU for WICEN and their work in the Victorian fires, Mavis Stafford VK3KS, 70 years licensed, and Ted Thrift VK2ARA for his work as WIA Club Coordinator.

These awards will be presented to the recipients at suitable events.

In announcing these awards WIA President Michael Owen VK3KI said that the WIA and amateur radio was helped by the work of very many people, but the WIA was not very good at saying "Thank You." The awards presented by the WIA was one way in which amateur radio could both thank these people and also remember the past with awards honouring the contribution of earlier generations.

continued next page

Tony Hutchison receives Chris Jones Award

Tony Hutchison VK5ZAI is the WIA ARISS Coordinator and ARISS Coordinator for the Asia Pacific Region.

Tony says that ARISS, Amateur Radio on International Space Station is a positive way of introducing our hobby of amateur radio to students, and others throughout the world, by demonstrating how it is used to communicate with the crews on the International Space Station.

During the year, eight schools in the region took part in scheduled link ups with the ISS crews, including three from New Zealand and the rest from Australia.

The value of Tony's contribution

to amateur radio and the WIA was recognised by the presentation of the Chris Jones Award at the Open Forum.

The award is a handsome glass plaque and presenting the award to Tony, WIA President Michael Owen VK3KI read the inscription which is:

"The Chris Jones Award honours the memory of a man who was dedicated to the advancement of amateur radio and whose unfailing commitment and vision led to a new Wireless Institute of Australia and whose unfailing courtesy and genuine friendliness is fondly remembered by all who knew him."

Tony accepted the award, thanking all those who had supported ARISS.



WIA President Michael Owen VK3KI presents the award to Tony Hutchison VK5ZAI

(Editor's note: See the inside back cover for a colour photo of Tony with his award.)

Peter Freeman awarded G A Taylor Medal

The final award was the rarely presented G A Taylor medal. This award was first suggested back in 1981, finally being struck in Perth in 1988. The medal is presented in a box, with an inscription of the award's history.

(Editor's note: See the inside front cover for a colour photo of Peter with his award and the full story of the award.)

In presenting the medal to Peter Freeman VK3KAI, WIA President Michael Owen VK3KI stressed that while Peter had contributed to amateur radio in many ways, in particular with the annual VHF/UHF oriented technical conference GippsTech conducted by the Eastern Zone Amateur Radio Club, it was his ongoing contribution as Editor of Amateur Radio and Chairman of the Publications Committee that was being honoured. Michael paid tribute to the

quality of the magazine under Peter's direction, acknowledging the ongoing pressure of deadlines imposed on those producing the magazine.

In accepting the medal Peter expressed

his surprise and gratitude, paying tribute to all of the Publication Committee members who worked for the success of the magazine.

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GippsTech 2009

presented by Eastern Zone Amateur Radio Club (Inc)

**Weekend of July 10, 11 & 12,
Monash University, Gippsland Campus,
Churchill, Victoria**

A full program of technical presentations relating primarily to

**VHF, UHF and microwave weak signal
communications**

Lots of time for informal discussions

Displays of equipment bought by attendees

Full details can be found on the club website:

<http://www.vk3bez.org/>



WIA President Michael Owen VK3KI presents the award to Peter Freeman VK3KAI

"GippsTech – Special Edition" and the WIA AGM activities

Peter Freeman VK3KAL

EZARC organizes a happy marriage between the WIA AGM and a form of its own well-regarded GippsTech event. The combined weekend was a great success.

In late January 2009, I was approached by WIA Director Robert Broomhead VK3DN with a request for my local club, Eastern Zone Amateur Radio Club (Inc.) (EZARC) to consider changing the date of its signature event – GippsTech – to earlier in the year.

The aim was to consider holding GippsTech as an adjunct to the WIA Annual General Meeting. Following discussion with Robert whilst showing him around the Gippsland Campus of Monash University, I undertook to raise the question with the Club committee.

At the committee meeting, a universal opinion was that we were not willing to move our event to the extent required to fit in with the WIA statutory requirements, which needed the meeting to be held in May. However, the committee did offer to host an extra event with a theme similar to the traditional GippsTech.

Robert was delighted with the news, and thus we all commenced detailed planning. The first decisions were to confirm the date and settle on a name for the conference part of the weekend of activities. Thus "GippsTech – Special Edition" was born. Part of the logic was to both build on the reputation of GippsTech as a worthwhile attraction, and to hopefully raise awareness of GippsTech amongst those who attended the AGM weekend, with a possible outcome being that they would consider attending the "main event", held each year in July.

Presentations at the usual GippsTech are offered by amateurs who are willing to share their experiences. I normally start calling for papers early each year, with offers coming in slowly until late May. Then there is usually a rush of offers and we end up with a very full program. With the need to fit the formal AGM and the informal Open Forum into the weekend, this approach would not be

suitable. I therefore developed a plan: I would approach some notable presenters who I knew would be able to give a new slant to topics previously presented at GippsTech, with a flavour that reflected the main GippsTech event, plus I would ask some individuals to present on some topics that I thought would be of interest to all amateurs present. Fortunately everyone agreed to present! We also prepared a break out session focussed on Foundation licensees.

As I work at the campus, parts of the organising tasks were relatively easy – many aspects are essentially the same as the usual GippsTech. Rooms were booked, the catering organised for Friday evening and Saturday lunch. Robert undertook the tasks associated with the AGM, including the Dinner on Saturday evening and breakfasts for Saturday and Sunday, and the tours planned for Sunday afternoon. Robert also organised the promotion of the event and registration processes.

Registrations proceeded well, with an on-line form linked to an e-commerce system. This allowed attendees to register and pay on-line, with processing occurring through the WIA office following completion of the on-line process. With about a week to go to the event, we were close to 100 people coming. I believe that the final numbers were about 115, with around 80 people attending each of the major events planned and a small bus was operating on Saturday for the alternate activity.

Final arrangements were in place and everything started to happen early on Friday afternoon. Robert arrived, with

Phil VK6APH on board. Just as we were ordering lunch, Guy VK2KU called me on the mobile phone to advise that he had arrived. Guy arrived a little while later to join us for lunch, after which we started many tasks: checking the rooms to be used, erecting directional signs and a mast with VHF vertical and HF portable antennas. All was in readiness at the venue.

Friday evening

Attendees started arriving at the University from around 1630 on Friday; with a few requiring some directions to find the best place to park and then enter the buildings.

The evening activities were held in the Bistro on campus. We were able to enter the venue at around 1800, with much discussion occurring amongst attendees. By about 1830, the catering staff began serving the main course. At an appropriate time, dessert was on offer, with coffee and tea available as well. Everyone enjoyed the meal. Throughout the evening, much discussion continued.

At around 1930, Robert welcomed everyone and introduced the first of the speakers for the evening.



Michael Owen VK3KI opening the Conference

Chris Morley VK3CJ is Secretary of EZARC, but was tonight wearing his hat as Secretary of the Latrobe Valley Astronomical Society (LVAS). His presentation took us through 400 years of astronomy, accompanied by many interesting images and outlines of the developments in telescope technologies that have occurred over that period.

Following Chris were **Rex Moncur VK7MO** and **Justin Giles-Clark VK7TW**, who presented on the developments they have undertaken to date on communications using optical waves, notably using Luxeon LEDs. So far, they have made one-way contacts in excess of 200 km over obstructed (not line of sight) paths. They outlined their plans for attempting a 300 km path using their current equipment.

Following the presentations, most attendees moved out into the University grounds for some interactive displays. LVAS members had several telescopes set up, but unfortunately the cloud had moved in, so little could be seen in the heavens. **Ralph Edgar VK3WRE** demonstrated some optical communications equipment, showing everyone that the systems were relatively simple and did produce usable signals, by bouncing the light waves off some trees a couple of hundred metres away.

Most had headed off by just after 2200 as a long day of activities was to start before 0930 the next morning!

Saturday: GippsTech – Special Edition

Saturday began bright and early, with only one hiccup – we were unable to access a water source early enough to ensure that we had hot water for tea or coffee prior to the day's main activities beginning.

The alternative activity was organised by Margaret from the WIA office. Aimed at those who did not wish to partake of the technical presentations, it took in several cultural and historical sites around the Latrobe Valley.

The group visited the Morwell Rose Garden, Latrobe Regional Gallery (LRG), the Brown Coal Museum at Yallourn and Narkoojee Winery at Glengarry. Of course, key sites had appropriate refreshments: the Café at the LRG was the venue for lunch, and afternoon tea was at Narkoojee, in conjunction, I am sure, with some

samples of their fine wines.

At Churchill, the day was launched at around 0900 by WIA President **Michael Owen VK3KI**, followed by a quick introduction to GippsTech by yours truly. We then kicked off the presentations for the day.

Phil Harman VK6APH is heavily involved in the HPSDR (High Performance Software Defined Radio) project. He has co-authored a series of articles in *Radio Communication* (RadCom), the RSGB equivalent of *AR*. Phil gave an overview of the principles of Software defined Radio and concluded with an outline of the key HPSDR project modules – one can put together a complete SDR transceiver covering LF to 55 MHz using the currently available HPSDR modules.

Next up was **Andrew Martin VK3OE** (ex **VK3KAQ**). Andrew reviewed the history of tropospheric ducting as a mode of enhancement on VHF and UHF frequencies, from **Ross Hull's** observations in the US through to recent events. Andrew's work has previously been presented at GippsTech and in *AR*. He has developed a keen understanding of the mechanisms involved in propagation using ducts and is more than willing to share his understanding.

The coffee break allowed opportunities for discussion in addition to obtaining a refreshing brew. It also gave attendees an opportunity to peruse the stock of the WIA Bookshop and to examine copies of the Proceedings volumes from GippsTech events past. Throughout the breaks in the program, some of the EZARC members were selling raffle tickets. Following the coffee break, we broke into two streams of talks.

The stream intended for Foundation licensees had a set back before the weekend commenced: **Ron Bertrand VK2DQ** had succumbed to illness and was not able to attend. However, **Michael Owen V3KI** and **Phil Wait VK2DKN** ably lead a discussion about how to go about upgrading to a higher level licence. This session was followed by a presentation by **Roger Harrison VK2ZRH** on what amateurs might expect in the way of HF



Peter Freeman VK3KAI outlined the amateur microwave bands and some of the equipment that can be utilized for microwave communications. Here he is describing the working of parabolic reflector antennas.



WIA Director **Phil Wait VK2DKN** took the audience on an entertaining walk through a high efficiency but high quality AM transmitter for 40 m.



Phil Harman VK6APH describes the features of the Mercury Direct Digital Conversion Receiver module, part of the HPSDR project. (See cover photo)

propagation as we move into the next sunspot cycle.

The main lecture room continued with two further presentations. **Drew Diamond VK3XU** gave the audience an introduction to what amateurs might expect with the new frequency allocation at 136 kHz, giving examples of suitable transmitters, receivers and what might be achievable with regard to antennas. It became clear in the afternoon Open Forum that Advanced amateurs can

apply now to access this frequency allocation, by applying for a variation to their licence.

David Smith VK3HZ then discussed the "where, why and how" of locking amateur transceiving equipment GPS-locked frequency references. David's talk was focussed on VHF, UHF and microwave equipment, but provided information on why this may become an important issue for all amateurs in the future.

After the second session presentations, almost all attendees enjoyed the barbeque prepared by the Churchill and District Lions Club. Basic food, but relatively easy for all involved (apart from the Lions Club members) – all that we needed to do was to line up and be served! A side benefit is that any profit goes towards projects that support the local and broader area communities.

WIA AGM

After lunch, all still present gathered in the main lecture room for the WIA AGM and Open Forum. The AGM was completed quickly, in around 12 minutes. All that needed to be completed were the necessary formal requirements.

The Open Forum commenced with the presentation of Awards by the WIA for the past year. You can see the details in another article in this issue.

A number of reporters were then invited to present the highlights of their annual reports, with opportunities for audience members to ask questions and/or pass comments. At the end of the session, all agreed that the Open Forum was a valuable aspect of the weekend, and that consideration should be given to increasing the time allocated to the forum.

Annual Dinner

Most attendees gathered by 1800 hours at the Century Inn for the Annual Dinner. With both amateurs and partners in attendance, there was much discussion about what had occurred earlier in the day. To the delight of all a superb meal was served.

Following dinner, we had a presentation from Dr Rob, who is a member of a team that presents weekly on community radio and the World Wide Web, with a focus on current and possible future technologies, their uses and future implications. The light-hearted presentation was well received and informative.

Sunday morning: more GippsTech – Special Edition

Sunday morning saw another early start, especially for those joining in at the informal breakfast at Century Inn.

Activities kicked off at Churchill at 0900, with Barry Miller VK3BJM talking about Aircraft Enhancement and



Andrew Martin VK3OE (ex VK3KAQ) explaining the interactions between elevated ducts and radio waves.



Barry Miller VK3BJM lead the audience through the history of amateur exploitation of Aircraft Enhancement propagation and outlined how you can exploit the mode on VHF and UHF frequencies and possibly beyond.

how to exploit it. Barry explained some of the history and controversy regarding this propagation mode, how it works and what may be achievable. He also outlined the aids that are now available and how you can go about attempting to use the mode to contact that distant, rare, grid square on VHF and UHF.

The next presentation was by your author, giving an introduction to microwave communications for amateurs. This topic could go for hours! I attempted to give an outline of the reasons why microwaves are attractive to some amateurs and how we can go about using the microwave bands.

The GippsTech - Special Edition talks were completed with an entertaining presentation by Phil Wait VK2DKN on how to construct a high-quality AM transmitter for 40 metres. Phil has described this project in past issues of AR, and gave an outline of the design principles and practical considerations involved in constructing a high power AM transmitter.

Proceedings concluded at Churchill about fifteen minutes late - we had run a little over schedule.

Topical tours

As the entire weekend was based in the Latrobe Valley, it is not surprising that the weekend concluded with two tours of industry in the local area.

First up was a tour of the Loy Yang A Power Station, conducted by PowerWorks. We all assembled at PowerWorks to receive a briefing - no cameras (including mobile phones!). So no photos for you to view!

Onto the buses and off to the power station. A briefing was given whilst en-route and then we saw the station up close. After obtaining ear plugs, we travelled up to the turbine and generator hall. I doubt that the guides have seen so many tour participants looking at the fine detail on the

labels attached to the turbine and generator equipment!

As time was running short, we then departed for a quick tour of the Loy Yang open cut mine - the scale is massive. It was then a quick return to PowerWorks to jump into our vehicles to travel to Latrobe Regional Airport.

The Airport does not currently have



Drew Diamond VK3XU describes how his homebrewed variometer works to assist in tuning an electrically short length antenna for use on LF.



Part of the crowd at the Annual Dinner on Saturday evening



In the development area at Gippsland Aeronautics, Aeronautical Engineer Ed O'Brien explains how the team are developing new applications using a belly pod that fits beneath the GA-8 Airvan.

any commercial passenger flights. One legacy from past activities is showing some continuing success, even if activity levels are down at present due to the global economic recession. A small local industry that started in aircraft maintenance has developed into a firm called Gippsland Aeronautics. The maintenance activities expanded into the production of a "crop dusting" aircraft.

With the experience gained from the design, construction and approval processes with this aircraft, the company went on to identify a market niche for an eight seat general light aviation craft – the GA-8 Airvan.

It has been very successful, being sold into many countries around the world. It may look basic, as the cabin is basically a box! However, this has many advantages, including internal space available for fit out with many different options. The company is also looking to the future, having acquired the rights to the Nomad aircraft – a design well respected around the world.

After a briefing, we were conducted around the production facility, seeing how the aircraft is produced from sheets of Duralium, precision cut, shaped, folded and riveted into subassemblies. Then the sub-assemblies are put together into a complete aircraft. Whilst some components, such as the engine and propeller, are sourced from overseas, most of the aircraft is manufactured on-site.

The weekend ended quietly, almost in a whimper, as people drove off as they finished the tour. I am aware that some gathered at a Chinese restaurant in Traralgon for a meal on Sunday evening, whilst others headed for home, either nearby or far afield.

Overall, everyone I spoke with on

Sunday passed comment on how terrific the weekend had been – how much they had enjoyed the whole program. Several even said that they would be seeing me again in July for the main GippsTech conference.

In closing, I must thank everyone who made the weekend a success, all involved in making it happen, the presenters, the WIA staff and Board members, members of EZARC who assisted, Churchill Lions, LVAS, Alliance Catering, Century Inn, PowerWorks and Gippsland Aeronautics. And last but not least, all who attended – the best planned event will be a total flop if nobody attends!

I am sure that all involved directly in making it happen were feeling somewhat exhausted at the end of the weekend, but I certainly received good feedback to indicate that the entire weekend was well received.

I look forward to catching some of you again in July, for the usual annual GippsTech technical conference on July 11 and 12.

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The team from Churchill & District Lions Club, ready for the crowd to arrive for



The group loading up on the buses at PowerWorks, ready for the tour of the Loy Yang A power station

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have been licensed for more than 25

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or call Derek VK3XY on 03 9563 6909 or
Bill VK3BR on 03 9584 9512,
or email to raotc@raotc.org.au
for an application form.

VK2

VK2 was honoured at the recent WIA AGM when Stan Bourke VK2EL was the recipient of the annual Ron Wilkinson Award

Stan has had over 60 years in the hobby. In the mid 1950s Stan was the Treasurer of the NSW Division when the Dural property was purchased. Stan drove a hard bargain and extracted a good reduction in the asking price.

Stan was at many of the working bees to construct the VK2WI building and also provided the transmission facilities – from the boot of his car – for the first broadcast from the site. Stan has had an eventful life in electronics. For further details on the Award check the WIA news site.

Bob VK0BP has reported a good copy on the VK2WI Sunday news session via the 20 metre outlet -14.170 MHz - down at the Davis Base in the Antarctic. Bob included a good picture of the southern lights, taken while the broadcast was on. Callbacks are not normally taken by VK2WI on 20 metres due to a high noise level local to the site.

Reports from listeners within and beyond Australia are welcome and may be made by email to the news site arnews@tpg.com.au Mail to P.O. Box 6044 Dural Delivery Centre NSW 2158 or telephone the office 02 9651 1490.

Bob's web site is www.vk0bp.org where you will find new photos. With winter fast approaching and less daylight, down to four hours in May, he reports vastly changing band conditions.

The Oxley Region ARC annual field day is being held in Port Macquarie on

the Saturday afternoon and all Sunday of the June long weekend. The venue is the Sea Scouts Hall in Buller Street, the regular location in recent times. Fox hunts Saturday afternoon from 1500 hours and all of Sunday. On Saturday a new event, an all band scramble for 30 minutes from 1730 hours. This will be followed by an informal social evening at the Bowling Club. On Sunday, Traders and Disposal tables all day. The famous BBQ lunch for purchase. Tea and coffee free all day. Registration is \$5. Presentation of prizes at 1530 hours.

Also attending the field day will be the Mid North Coast Amateur Radio Group where they will be exhibiting their range of kits for the amateur community along with demo units. They have also developed an impressive web site and recently added an automated radio prediction service. Check out www.mncarg.org

The Blue Mountains ARC annual Winterfest is scheduled for Sunday the 23rd of August. They recently held their AGM with Tim VK2XTT as President; Pascal VK2IHL as Vice President; Carl VK2HRC as Secretary and Treasurer is John VK2FSFC. Other committee members are Gunter VK2JAP, Alf VK2YAC and Richard VK2LET. Andrew VK2FACV looks after contests and the club magazine 'Ragchew'. Daniel VK2DC has Education and is also the Historian. Dennis VK2RM has HF nets and Steven VK2VSV has the Web. The club meets on the first Friday evening at Glenbrook.

A new group in southern Sydney is the Hellenic Amateur Radio Association. They meet on the first Tuesday evening at the St. George Sailing club, 2 Riverdale Drive, Sans Souci when they have their club rooms. Watch out for club call VK2CL. The website is www.haraoa.com President is Tommy VK2IR and Secretary Chris VK3FY. Telephone contact 0413 005 511 or 0419 155 139.

Usually in June the

Waverley ARS have had their annual auction. They meet in a Scout hall in the Sydney eastern suburb of Rose Bay. There are now other users of the main hall and finding a slot has become difficult. This year it will be held on Saturday the 18th July. Doors open at 8.30 am for a 10 am start. The Society is currently celebrating their 90th year. A dinner is being planned. Check out details on their web site www.vk2bv.org

WICEN NSW is providing communications to the St. Albans Ride over the June long weekend. Next month is a busy time on 4th and 5th July with both the Northern Rivers Eden Creek Horse Enduro and the Wilderness Rescue Navigation Shield; the Shahzada Horse Enduro is over the week 17th to 21st August and the Hawkesbury Canoe Classic on the weekend 24th – 25th October.

WICEN provides communications assistance to the community. Contact them by mail to P. O. Box 126 Gosford NSW 2250; send email to operations@nsw.wicen.org.au telephone 0408-397-217 or visit www.nsw.wicen.org.au

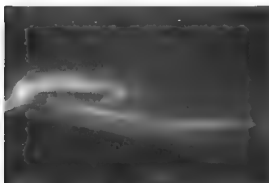
The Radio Homebrew and Experimenters Group – a function of Amateur Radio NSW – meet on the first Tuesday evening at Putney; have a 2 metre and 80 metre net on the third Tuesday evening and a meeting and activities in the afternoon of Trash and Treasure day at VK2WI Dural, last Sunday of the odd numbered month. The next will be July 26th. Check out the ARNSW website for further details.

The NSW Division AGM was conducted in April with 42 members in attendance. Business was concluded in about three hours. Thirteen members contesting the nine positions. When these notes were prepared the majority of the incoming office bearers had not been announced

The 'shed' development drags on with clarification of its final building code classification being determined. The intention was for it to be a simple 'storage' shed but the suggestion of 'a training facility' made it a whole new ball game. Hopefully, all will be resolved in time for the July T&T event.

73 – Tim VK2ZTM.

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The view from Bob VK0BP's window

Geelong Amateur Radio Club – GARC

Tony Collis VK3JGC

The New GARC Committee

From the AGM on the 3rd of April the following executive committee members were appointed:

President	Dallas Jones VK3DJ
Secretary	Tony Collis VK3JGC
Treasurer	Andre Walker VK3FASW

Additionally the Public Officer role was transferred from Barry VK3SY who has held this role for many years to Nick VK3TY. In line with the current constitution, two additional committee members were elected: Kevin VK3FKEV and Gary VK3FGWR.

The New GARC Infrastructure

A greater participation in club activities by the membership has been initiated by the President VK3DJ with the creation of twelve operational posts varying from Property Officer to Club Librarian. Each post has a principal member allocated with a back up member; this will ensure that all GARC club members will know where to direct themselves on club related matters.

IRLP (node 6572) at 145.475 MHz

The GARC is pleased to announce that through the tireless efforts of Nick VK3TY, the GARC now has an IRLP facility to offer the Geelong area. The IRLP node, number 6572, can be found

at 145.475 MHz and operates in simplex mode as VK3ATL. The transmitter power output is somewhat QRP at 8 watts but has been successfully used by club members some 160 times in the first couple of weeks on air. The system is operational, with thanks to Nick, 7 by 24. Within the next few months it is planned that the IRLP node will be installed at the GARC repeater station VK3RGC on 147.125 MHz, which will afford it a much wider geographic coverage.

New Licences

Two new licences have been awarded to club members; Craig goes from an F call to VK3VCB and Arthur jumps straight into VK3LAD, our congratulations to them both. Owen VK3OWZ, GARC's training officer, assisted by Peter VK3ZAV and Peter VK3KP, has initiated an Advanced Training Course for club members based on the Radio Electronics School (RES) Advanced Course; special thanks to Ron Bertrand, manager of RES, for his kind cooperation in the provision of Advanced Course material.

Repeaters and Beacons

All the GARC beacons and repeaters are operational, with thanks to the efforts of Ken VK3NW.

Museums on Air

At this juncture it looks like the GARC will have at least two stations on air for the 20th and 21st of June operating from Queenscliff and North Geelong.

will be free to everyone.

There are reasonable motels located nearby and in Albury and Wodonga for those who wish to spend a weekend with us. On Saturday evening some club members will be having an informal dinner at the Albury Commercial Club Bistro where the prices are reasonable.

Contact Tom VKMY: sanders_01@bigpond.com Phone: 02 6026 2260 Mobile: 0417 546 695

Local repeater 147.000 negative offset or simplex 146.500: club call VK2EWC Peter Presutti VK2CIM E. vk2cim@wia.org.au Mobile: 0417 441 137

The GARC Solstice Dinner

This is being arranged by Barry VK3SY on the 26th of June at the club house in Storrer Street, East Geelong, and will be the same social format as previous years where members bring along wives and partners; food and drink contributions will be provided by the club members. Invitations have been extended by the GARC to other clubs to join us on the day.

Talks and Presentations

The syllabus up to the end of July is established and can be found at www.vk3atl.org under the heading of Upcoming events. The club meets at the Storrer Street address from 6.30 pm onwards with Syllabus activities starting at 8 pm.

Gippsland Gate Radio & Electronics Club

The Gippsland Gate Radio & Electronics Club members announce that on the 18th

July 2009 they will be conducting their Hamfest Sale at the Cranbourne Community Hall on the corner of Clarendon and High Streets, Cranbourne. High Street is part of the South Gippsland Highway. Melway 133 K4.

Forty tables of goods will be presented at this large venue, but stall holders should book early as demand is always high. Reservations for stall holders may be made by contacting Dianne Jackson VK3JDI on (03) 5625 2545 or hamfest@ggrec.org.au

Tables will be available for \$20 each. Doors open at 8:30 am for stall holders and at 10:00 am for buyers. Your entry fee of \$6 will go towards the continued upgrading of facilities at our Club shack and meeting room in Cranbourne. Take away food, plus free tea and coffee will be available. The entry fee includes a ticket in the Door Prize which will be drawn around 1:00 pm for all who register upon entry. Great prizes to be won as usual. Additional tickets can be purchased on the day.



VK2 continued from page 31

Twin Cities Radio and Electronics Club

Felix VK2CIM

The annual Riverina Field day hosted by the Twin Cities Radio and Electronics Club Inc. is being held at Murray High School assembly hall on Sunday the 26th July 2009, on the corner of Kaitlers Road and Kemp Street, Lavington. Opening time is 10 am. stall holders 7 am.

Closing time is 1 pm. Tea and Coffee

Eastern Zone Amateur Radio Club News

WIA AGM weekend of activities

The start of May was busy for Club members: as you will almost certainly see elsewhere in this issue of *AR*, the Club hosted the WIA Annual General Meeting and ran an extra conference event as a feature of the weekend of activities.

Over 100 people attended, with around 80 attending each session on Friday evening and Saturday. A smaller number attended on Sunday morning, with numbers dropping off further for the Sunday afternoon tours, which was understandable as many had long distances to travel home.

Some aspects of the organisation of the activities were easier for the Club, as registration was arranged through the WIA. The Club was responsible for the GippsTech – Special Event activities over the weekend, including providing the tea and coffee on Saturday and Sunday.

The Club also ran a raffle, with Nick VK3VFO and Glenn VK3SI selling tickets during Friday evening and Saturday morning. The prizes were drawn following the afternoon tea break in the WIA Open Forum.

The Club thanks the companies that supported the raffle by donating prizes. The prizes and winners were:

Yaesu VX-8 handheld transceiver (donated by Vertex-Standard Australia); Justin Giles-Clark VK7TW.

Icom \$100 redemption voucher (Icom Australia); Glenn VK3SI.

Books from the WIA Bookshop (WIA). Guy VK2KU, Judy VK2HZV.

144 MHz stainless steel 5/8 whip antenna (G&C Communications); Nick VK3VFO.

In addition, several amateurs received small collections of items from Icom Australia, including an Icom mug just perfect for that favourite hot brew.

Our thanks go to Cameron VK3FZAT and Callum VK3FSDP, two young amateurs who attended the events, and were asked to draw the lucky tickets.

May Club meeting

On the Thursday following the WIA AGM event, the Club held its regular monthly meeting. The focus for the night was an introduction to Digital Communications, presented by Peter VK3KAI.

Members had previously requested the topic, so the Club purchased an interface kit from the Mid North Coast Amateur Radio Club. Peter assembled the kit up to the testing stage prior to the meeting.

At the meeting, the requirements to be met by an interface were discussed, including the required cabling to connect to your PC and transceiver. Referring to the manual for the transceiver, a cable was prepared in front of the audience.

Peter then fired up a laptop PC and loaded the *fdigi* software package. Everything was connected together via the interface, together with a mobile whip antenna on a vehicle outside the venue, the reward was some weak PSK signals on 20 m being easily decoded.

No attempt was made to transmit, as the appropriate checks had not been made. We then checked the software on CW, by listening to our local 144.434 MHz beacon, again on the 20 m mobile whip. The software worked perfectly.

Many questions were answered and everyone indicated that the activity had been worthwhile.

Training event

We will be running a Foundation training and assessment event on the weekend of June 13 and 14. Other assessments are available on Sunday, if booked in advance.

Register for the event by email to vk3bez@vk3bez.org. Be sure to clearly indicate which assessment you wish to attempt. Registrations need to be submitted by 1 June 2009.

GippsTech

The Club is now busily preparing for the real GippsTech event, to be held at Churchill on the weekend of 11 and 12 July. Booking details should by now be available at the Club website – just follow the GippsTech links: <http://www.vk3bez.org/>

The program is starting to shape up. As usual, a variety of topics will be covered, from a simple USB interface to control your radio, through to modelling transmission lines constructed from square section tubing, and a direct conversion, phasing type transceiver for 144 MHz.

Doug VK3UM will present some observations on the communications and other matters during the 2009 Kinglake-Murrindindi complex fires, a period when he was sitting in the middle of it all!

Andrew VK3OE will tell us all about getting a radio mast legally installed and how to safely use it. More details will be available soon from the website. Other amateurs are sure to offer topics in the next week or two.

We look forward to seeing many familiar and some new faces at Churchill in July. Remember, a key part of the weekend is the stimulating discussions which occur outside the formal presentation sessions.

ar

Amateur Radio

Is the voice of amateur radio in Australia

Do you have something to say about amateur radio?

If so, contact the Editor Peter Freeman VK3KAI

editor-armag@wia.org.au

In the first instance for all the details of how to get into print.



QTC
First Published July 1912 "Of, By and For the Amateur"
NEWS FROM THE QUEENSLAND RADIO AMATEURS

VK4

Christopher Comollattie VK4VKR

Email: vk4vkr@wla.org.au qtc@wla.org.au

CLAIRVIEW

What a weekend at Clairview! Amateurs from all over the place came along for a great weekend.

If you were not there, you missed out on a good chin wag session, monster plus auction and a raffle that almost never ended. The weekend was enjoyed by all and some even stayed for a few extra days.

TARC

Townsville Amateur Radio Club have drawn their raffle prize. The raffle winner was Myrtle Ellis of Rosslea. The seller of the winning ticket was Evie VK4EQ.

Myrtle's neighbour, Ray VK4NET presented the prize to Myrtle on Thursday April 9th. Myrtle reckoned she was over the moon as she had not previously won a raffle prize.

RADAR

Rockhampton and District Amateur Radio Club Inc. (RADAR) proudly announces its first big raffle in a long time – the RADAR Radio Raffle with a brand new Yaesu FT-1802M 2 m 50 W Mobile Transceiver donated by Jack Chomley VK4JRC (Thanks Jack). It is new in box with full warranty.

Tickets are two dollars each, with a maximum of 500 to be sold, so get in quick and don't miss out! The raffle will be drawn on 15th July 2009 at the RADAR Club Meeting. Books of tickets can be sent to other clubs if interested.

Contact RADAR Secretary Clive VK4ACC if you cannot make it to a RADAR meeting and he will arrange some tickets for you!

WICEN NET

WICEN Queensland holds a net every Sunday on 7075 kHz from 0830 am (2230 UTC). The net calls in regular

stations and then invites new stations to call in. If conditions are poor on 7 MHz, net control then moves to 3600 kHz. Mix it with other WICEN ops and call in on the net.

CHARC

Central Highlands Amateur Radio Club welcome the first edition of the CHARC News. Good luck guys and keep us informed with stories and upcoming events.

CHARC IRLP Node # 6037
Committee members for 2008/2009
President: Steve Wood VK4SMW
Vice President: Mark Robinson VK4KMR

Treasurer/Secretary: Gordon Loveday VK4KAL & Dorothy Loveday
Committee Members: Roy Moore VK4RM, Harry Cox VK4LE, Robert Waegele VK4TWR.

Publicity Officer: Helen Wood
Technical Officer: Steve Wood VK4SMW

Club mailing address: Central Highlands Amateur Radio Club
C/- Aviemore, Rubyvale QLD 4702
Contacts: Gordon VK4KAL on 07 4985 4168 or Steve VK4SMW on 07 4982 7459 OR 0418 879 248

Individual club membership \$20/year.
Couple or dual membership \$25/year

Please note that the CHARC AGM is held in September.

Happy birthday to Steve VK4SMW, who was given a birthday cake in the shape of a radio with his call sign on the radio's main display.

BAYSIDE DISTRICT AMATEUR SOCIETY

VK4BAR 80 metre net on Wednesday's 3.567 MHz at 1930, 2 metre net on club repeater Monday 1930 146.875 MHz, except the first Monday when they hold the general meeting.



The auctioneers VK4RM, VK4ACC VK4YLW and VK4FW

MACKAY AMATEUR RADIO

Want to help out? Mackay Amateur Radio Association Inc needs you! Contact co-ordinator George Adams VK4HAN 0413289220 for details on the MDTERRHC Endurance Ride - Denison Ck Station Sat 6, Sun 7, Mon 8, June, Sat 11, Sun 12 July, Fri 7, Sat 8 and Sun 9 Aug

SCARC

SCARC has had a busy month; it started with the club AGM, where a few new faces were elected to the Executive committee. The final outcome was President, Noel VK4NL, Vice President, Wayne VK4WS, Secretary, Gordon VK4VP, Treasurer, Keith VK4AKA, Committee members Mike VK4YFL, Richard VK4YRP, Harvey VK4AHW, and Warwick VK4NW.

At the AGM members voted on a recipient for the "Col McCamley Award" given each year to a person who has given outstanding service to the club, this year it was awarded to Noel VK4NL a very worthy recipient.

The club's WICEN-SES special communications group went to standby as Cyclone Hamish came down the East Coast. Members made the communications caravan ready to be relocated should it be needed. The WICEN group could be heard checking their message handling skills and procedures on their weekly net, it was with relief for all when Hamish moved away and they were stood down.

The club entered a team in the John Moyle Memorial National Field Day contest led by Bernie VK4KAC. As the communications caravan was stood down on the Thursday night, it was relocated to Howells Knob near Maleny on Friday for the weekend, along with the Maleny SES communications caravan and two other vans.

The contest team put in a good effort over the weekend on all bands, with a good time being had by all. The participants were Bernie VK4KAC, Harvey VK4AHW, Bill VK4WB, Richard VK4YRP, Wayne VK4WS, John VK4JMC, Harry VK4TK and Toby. As Richard VK4YRP arrived home on the Sunday evening with

the communications caravan, he was called out to assist with the oil spill cleanup on the Sunshine Coast, so after a quick cup of tea, it was off to Kawana to locate the caravan on site, ready for operations the next day.

Continued next page



Bill VK4WB



Bernie VK4KAC and David VK4JMR



SCARC SES van

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

The April meeting introduced us to the future. Leigh VK5KLT gave us a talk about RFID.

We all know the bar codes used so universally to identify items, whether they are in the supermarket or the radio parts store. In the future we will probably become just as used to RFID tags. RFID tags are read by RF readers rather than laser-light readers but they are much more versatile. RFID tags can be invisible to the naked eye, they can be

bent or deformed and still be readable. Leigh has been working in this field for many years and has helped to expand the use and usefulness of RFID into many industries.

We will find, in the future, that the whole 'life cycle' of an article will be tracked as it moves from place to place and owner to owner. One of the most recent investigations has been into the possibility of printing with an inkjet type printer, using inks with an RFID in it. It

has been done but is not yet practical on a large scale

AHARS ran a successful assessment weekend with passes achieved in upgrade tests as well as several Foundation candidates. If you are interested in sitting for a future assessment, please contact Sasi VK5SN QRZ the callbook.

Meetings of the AHARS are held on the third Thursday of the month at the Blackwood Community Centre as usual and all visitors are welcome.

VK4 continued from page 35

FNNQARG 2009

The 26th Far North and North Queensland Amateur Radio Gathering (FNNQARG!) takes place from Friday 5th to Monday 8th June at Cardwell Village Beachcomber Motel and Tourist Park.

Campsites, Caravan sites, Motel rooms, Villas and Cottages are going fast and Management advises that these will be booked out pretty quickly during the next month or so. If you have not already booked your accommodation then you

need to get cracking!

Contact the Cardwell Village Beachcomber Motel and Tourist Park now to make your booking on telephone 1800 005633.

Some activities have already been planned with the famous NQ vs. FNQ Cricket Match complete with impartial umpire flying in from overseas, the mighty TREC Trivia Challenge (do not forget your clipboard) technical demonstrations, participation in the VK

Shires Contest activating the Cassowary Coast and tours of the local Telegraph Museum.

Time to book for FNNQARG!

Those not planning to go to FNNQARG this year from the Townsville Region should seriously consider helping out with communications for either the Mount Stuart Tarmac Rally Sprint or the Strand Mini Swim instead of gathering dust and girth at home during the June Long Weekend.

VK4 REGIONAL HF Nets

Monday Evening - Mackay
Club Net - VK4WIM Net
Control - 3597 kHz from
0930 Z

Tuesday Evening - RADAR Net
- VK4WIR Net Control -
3613kHz from 0930 Z

Wednesday Evening - Gold Coast
Net - VK4WIG Net
Control - 3605 kHz from
0930 Z

Thursday Evening - Henry Fulford
Memorial Net - VK4WAT
Net Control - 3588 kHz
from 0930 Z

Thursday Evening - Sunshine
Coast Net - VK4WIS Net
Control - 3660 kHz from
0930 Z

Thursday Evening - Hervey Bay
Net - VK4CHB Net
Control - 3615 kHz from
0730 Z

Friday Evening - Central
Highlands Club Net -
VK4WCH Net Control -
3618 kHz from 1000 Z

Friday Evening - Lockyer Valley
Club Net - VK4WIL Net
Control - 3570 kHz from
0930 Z

Saturday Evening - Darling Downs
Net - VK4WID Net
Control - 3587 kHz from
0930 Z

Sunday Morning - WICEN QLD
Net - VK4IQ Net Control
- 7075 kHz from 2230 Z

Sunday Evening - North
Queensland Net -
VK4WIT Net Control -
3605.4 kHz from 0930 Z

Sunday Evening - Dalby and
Districts Net - VK4???
Net Control - 3585 kHz
from 1000 Z

The Annual General Meeting

As usual we had a great roll up for the AGM, which was held on the first Monday of May. Propagation was good and 19 stations were heard, most of them heard by everyone, wherever they were located.

ALARA has a number of new faces in committee positions.

Tina VK5TMC is now President, Lesley VK5HLS is first Vice President and Shirley is second Vice President.

We have a new Secretary, Marisa VK4FMAR, a new Publicity Officer, Aysha VK5FASH, a new Historian, Sue VK5AYL and Lesley VK5HLS has volunteered to take over as Contest Manager.

After 27 years in various capacities, Marilyn VK3DMS retires from the ALARA committee. We wish her a well-earned rest, though no doubt she will still be active for ALARA as well as in many other fields.

The outgoing committee was thanked for its effort and the new committee welcomed.

Impending visit to Dayton

Tina, our new President, and her OM Robert VK5ZHW are going to the monster Hamfest in Dayton Ohio this year especially to make a presentation at a YL Forum there, to talk about ALARA and the YL International Meet we are planning to hold in Adelaide in 2012.

Unfortunately, Tina will not be appearing at her very best as she managed to break one ankle and sprain the other, a couple of weeks before Easter.

With permission to travel from her doctor she is looking forward to Dayton very much even if she has to wear a 'moon boot' for some of the time. There will be many readers who have had to wear moon boots so they will sympathise!

We wish her well and look forward to hearing all about it when she returns.

Visitors to Bendigo

From Jenny VK5ANW:

"On Saturday 11th April 2009 Pam VK3NK and Jenny travelled to Bendigo with their respective OMs Graeme VK3NE and Peter VK3RV to enjoy the many activities of the Bendigo Easter Festival.

One of the activities was a display of amateur radio by the Midland ARC. The same venue also had a display of historic radios and an astronomy display.

Two of the YL Midland club members are Monica VK3FMON and Heidi VK3FHID. It was good to catch up with Monica and to meet Heidi for the first time. Monica is the XYL of the Midland Club President Kevin VK3CKC, and was taking the entrance fee at the door".

ALARA at the WIA AGM

This year there were thirteen ALARA members at the AGM but they were not all together at one time for a group photo, however.

Only VK3 and VK5 were represented this year, with Jean VK3VIP, Margaret VK3FMAB, Margaret and Dianne VK3FDIZ from the WIA office, Monica VK3FMON, and Lia VK3LPH.

From VK5, there were five more, Meg VK5YG, Leanne VK5JQ, Jenny VK5ANW, Jenny VK5FJAY and Christine VK5CTY.

The program arranged by the WIA was very interesting and the event was enjoyed by all who attended.

Remember, next year is the Centenary of the WIA, so we can expect an even better AGM weekend.

A personal comment and sign off

May I wish the new ALARA correspondent all the best? It seemed a good time for a new voice for ALARA. Thanks to all those who have read my items over the years I have been writing the column.

73, Christine VK5CTY



YLs at the WIA AGM: Jeanne VK5JQ, Jenny VK5ANW, Ros VK2FROS, Margaret from the WIA office, Lia VK3LPH, Margaret VK3FMAB, Meg VK5YG, Christine VK5CTY, Jenny VK5FJAY, and Jean VK3VIP with Lyn from VK2 on the end.

News from

Kelth Bainbridge VK6RK

VK6

Yet another month has passed and still no sign of a new Sunspot cycle! The DXers in the state are getting restless, as I can confirm after chatting to NCRG members every Sunday morning. Surely something must happen soon!

In desperation some are looking at alternative sources of DX. Satellites still have no High Earth orbiter so they are out, but what about moonbounce?

Your scribe has decided that it has to be given a try so a 2.5 metre dish is about to perch on the AZ/EL rotators and a 300 watt amplifier is under construction for 1296 MHz; look out Moon!

First off this month is news from Dennis VK6KAD.

WARG News

If you are coming to VK6 by road, then unless you come via the Kimberley you must pass Kalgoorlie-Boulder. Kalgoorlie used to have a 2 metre repeater, popular with travellers on the train and those driving west. It was the first repeater after the Nullabor, and the last before the Nullabor. Sadly, the number of hams in the area declined, the repeater was sabotaged, and fell into disuse.

It is back! With a rise in the number of active hams in the area, VK6RAK has been reactivated. It is on 147.000 MHz with an input on 146.400 MHz. The antenna is at 9 metres, in Boulder, and the coverage is not yet fully plotted. A better location is being investigated. Already the repeater has been used by travellers on the Indian Pacific. It is not yet linked to IRLP or Echolink, but they are looking at it up there in the Goldfields.

Geraldton is on EchoLink. The EchoLink node is now permanently up and running and has the following details: Link node ID - VK6KCI-L, EchoLink Node Number 412591, location 28° 42.276'S, 114° 37.733"E, frequency 145.350 MHz (simplex), TX Power 44 dBm (25 W), antenna, omnidirectional +6 dBi at 16 m AMSL. Coverage is mostly reliable throughout Geraldton city and suburbs, to a radius of approximately 15 km with the 25

W TX and RX sensitivity is < 0.2uV at 12 dB SENAD. Coastal coverage is north to Horrocks Beach and south to Cape Burney. Node control via DTMF - connect by dialling node number - disconnect by dialling *9. Please note: Node may be connected to a conference server. If so, please check to ensure no local stations are using the link before dialling 9 to disconnect all stations. Please re-connect any conference servers after use.

I have also heard, but not officially, that the Bunbury 70 cm repeater is up and running, making two 70 cm repeaters in the bush!

VK6RCW, the VHF Morse training beacon in Perth has been fixed and returned to service. It is on 147.375 MHz. It has several pages of text, and transmits at various speeds within any one hour period. The speeds start at 3 wpm and work their way up. Between texts, the beacon identifies at 18 wpm. The program selects a block of text, randomly chooses the tone to be used, and sends it. Note that if the power goes off, the send reverts to 3 wpm on restart, so the hour period may not start at the top of an hour. Repairs were carried out by VK6HAM Tony, and VK6KAD Dennis. See the website <http://www.vk6.net/vk6rcw.html> or Google VK6RCW for information.

73 Dennis J Muldowrie VK6KAD vk6kad@iinet.net.au

NCRG

At the last NCRG meeting we were happy to have a visit from Bob VK6POP, the new WIA Director, even more so when he presented yours truly with a cheque for \$1000 towards the VK6-ZS 2 metre Beacon project. We were one of the lucky groups who were allocated a grant in the last round. Submissions for this year's grants are now due so good luck to those applying.

The project is progressing well with the antennas now designed and under construction, the position of the tower that they will end up on sorted out and a PC, radio and some software sorted out ready to get this Beacon on the road.

WIA TAC has approved the frequency of 144.950 MHz as the TX frequency and a callsign VK6RIO, Indian Ocean, has been applied for. Hopefully we will have a basic setup on the air before August and the full WSJT keying working not too long after that.

The NCRG also had a visit from Ernie VK3FM from the Publications Committee and my contact for these notes. He was suitably impressed with the set up at Whiteman Park and suggested a detailed article needed to be written on the Club; we will see!

The one problem we have there is a lack of Internet access. We are a long way from a phone line so wireless linking was discussed. This resulted in a dish being placed on top of one tower, with John VK6JX balanced up there, while other club members headed to another QTH to try to set up the other end of the link. A few disasters followed but a partial link was established. Much more work needed it seems.

Finally from me, I have a new callsign. When I arrived from the UK in 1987 I was given the call VK6BRK, my initials in the wrong order. It was not a good call on CW so I changed in 1989 to VK6XH. Recently I noticed VK6RK was free so I have changed. I still hold VK6XH as it is paid up for four and a half years but RK will be my preferred call from now on. Look for me on 1296 MHz moonbounce soon!

Peel Amateur Radio Group

A little about us - the Peel Amateur Radio Group was formed in 1982 to serve the needs of amateur radio and electronic enthusiasts. PARG covers an area from Kwinana through to Waroona in the south, incorporating the cities of Rockingham and Mandurah. We are only a small club, but wishing to encourage new and old amateurs in helping put VK6 on the map. Yes we are here to stay!

continued on page 40

VK8

John Moyle Field Day – Top End Style

On the Friday afternoon Terry VK8TA picked up Peter VK8HPB from his QTH and, after loading some extra gear, proceeded to Mount Bundy station where we were going to operate for the John Moyle contest. No it is not a site relating to Bundy Rum!

Mount Bundy station is situated about an hour and a half by road south of Darwin on the Adelaide River. It was a large cattle property but they have diversified into tourism to give southerners a taste of cattle station life. The buildings are all aptly named e.g. Billabong House (cause it is next to the billabong, where we operated from), Cooks Quarters and so forth.



Not exactly roughing it at Billabong house

The owners Scott and Sue operate a small stable of horses for clients to ride and they will also teach you to ride if you cannot. They also conduct a one day trail ride through the hills around Adelaide River: a very interesting ride with magnificent views and scenery. Well worth the effort. The costs are reasonable to stay there and there is also a camp ground for those more adventurous souls who would prefer to "rough it".

We arrived there around 5.30 pm travelling through a torrential tropical downpour and were met by Sue the station manager who showed us around. Trevor VK8TJW and his mate Ray arrived later and helped unload the gear and set up the station.

As we had been there previously, we knew where we wanted to site the

antennas but due to the lateness of the day decided to run the genny as it was new and set up a 2 m Slim Jim. So we set about the task with Gusto (dunno where he came from but he was welcome).

Saturday looked promising with not a cloud in sight so no rain ... maybe. Before breakfast Terry realized he did not have any milk for his Weet-Bix and with Peter not feeling the best, we went to town to find a clinic and some milk. Peter was given some medicine by the Adelaide River Health Clinic nurse and with instructions to take it easy, yeah right! We have a contest to run, so off to the Station for set up and contest.

Plan A was to set up single band dipoles and have several different bands operating at the same time. We quickly reverted to Plan B or, as time means contacts or loss of, Peter quickly erected a 20 m dipole and started to call VK8DA/portable Mount Bundy. The numbers started to roll in. Terry slowly started to erect the 80/40 m dipole but had to wait for assistance to erect the Clark mast.

Gary VK8BN and Wendy his XYL arrived, Gary assisted Terry to erect the 80 m antenna, Wendy made sandwiches for lunch. They then moved onto erecting the 15 m dipole. As they were completing that job Richie VK8RR and Paula his XYL arrived and Richie assisted with erecting the 15 m dipole.

Around 1300 Ron VK8NRI and Dan VK8AN arrived and quickly set up the 80 m and 40 m station but as there was no propagation in our area we waited to the evening to try again.

Late afternoon the sky became a little dark with some rumbling in the distance signalling a storm, so we kept an eye on it and kept operating. It did eventually into a small storm which moved around us, but we did get some rain on and off into the night.

We operated into the night but lack of propagation on 80 m and 40 m and interference from our northern neighbours curtailed our activities, so we called it quits around 9 pm with a vow to get up early and try again.

Sunday morning looked bright and clear with no hint of storm clouds. Peter started the Honda and connected the 80/40 m dipole to try for some contacts. Slowly the contacts were made, some on 40 m, some 80 m, so we had some propagation. The others awoke, went into operating mode and started calling.

We tried to call into VK8DA after the WIA broadcast and were surprised we made it. We aroused some interest as we made several contacts with some VK8s.

But good things must come to an end and so we signed off on the last contact and vowed to do it again next year.

It was a good venue with low noise and a large area to erect antennas but a bit disappointing as we did not make as many contacts as last year. More planning is needed on what gear to take, what antennas to erect, and so on.

I would like to say thanks to Terry VK8TA, as this was Terry's last John Moyle Field Day. Terry was the driving force behind getting the Darwin Club into operating portable for the John Moyle Field Day for several years. He also supplied some of the antennas, radios, a generator, coax and all the bits and pieces that go together to make a successful operation. Thanks Terry: we will be lost next year without you.

Thanks to Ron VK8NRI and Dan VK8AN for assisting in the operation of the station for this year's contest.

Thanks to the organisers of this year's event and to those we made contact with we will see you next year. Listen out for VK8DA/portable from....who knows where??? (watch this space).

Cheers and 73 Peter VK8HPB

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*Editors note: Interestingly, while denying the Bundy Rum connection, Rum Jungle is 'just up the road'.

The original 'Mt Bundy' station was 1.1 million acres or more than 17,000 square miles, about 2/3 the size of Tasmania or bigger than The Netherlands. The name lost its 'e', changing to Mt Bundy for the camp section when the station was broken up.



PARG – and the JMMNFD

On the Friday afternoon/evening of 13 March, Warren VK6MOD, Michelle VK6FMOZ, PARG President Wayne VK6FBLU and Joanne VK6FJPB met at the Alcoa Lookout in Pinjarra to start setting up for the John Moyle weekend. Once the SES van and the camper van were set up it was time to eat. The wind decided to visit with vengeance so out came the winter wear. Warren entertained the rest of us while putting the coax together for the next day.

On Saturday the day started off windy and cold. This did not dampen our spirits at all. Terry VK6TTF and

Gavin VK6VKS were the first to arrive, and got us all out of bed to start the competition activities. Rex VK6SN and Maureen were soon to arrive. Warren assured us all that the wind would die down by lunch (and so it did - good on you Warren).

Next came the fun bit putting up the antennas; the frequencies were 70 cm, 2 metres, 6 metres, 80 metres, 40 metres and 20 metres. We all spent the rest of the day taking turns on the radios making contacts and having a lot of fun. We newbies had the pleasure of learning from the oldies how to do this. It took a lot of nerve for us to be involved, with good results. With visitors coming and going all day long it was a very positive experience.

PARG is relatively new at participating in field days, and we actively encourage new membership so that we can become bigger and

better in future field days. We welcome all visitors and readily assist anyone to obtain their amateur licence. We meet every second Monday of every month, 1930 at SES HQ, Park Rd, Mandurah.

Contributed by Michelle VK6FMOZ.

Thanks Michelle for an interesting presentation, good luck and I hope to hear more of the Peel Groups activities in the future

That's all folks.73 from still sunny Perth.

Keith VK6RK

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What the John Moyle is all about: camping and contacts

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Contest Calendar for June 2009 – August 2009

June	6/7	IARU Region 1 Field Day	CW
	6/7	VK Shires Contest	SSB
	13/14	ANARTS WW RTTY	Digital
	13	Asia / Pacific Sprint	SSB
	20/21	All Asia DX	CW
	20/21	Winter VHF/UHF Field Day	All modes
	27/28	Marconi Memorial Contest	CW
July	27/28	ARRL Field Day	All
	1	Canada Day Contest	CW/SSB
	11/12	IARU HF Championship	CW
	12 (TBC)	Jack Fyles Memorial Contest	CW/SSB
	18/19	CQWW VHF Contest	All modes
	19	VK/trans-Tasman 160 Metres CW Contest	CW
	25	Waitakere (NZART) Sprint	SSB
August	25/26	RSGB IOTA Contest	CW/SSB
	2	TARA Grid Dip	PSK/RTTY
	2	Waitakere (NZART) Sprint	CW
	2/3	10-10 International QSO Party	SSB
	8/10	Worked All Europe	CW
	16/17	Remembrance Day Contest	CW/SSB/FM
	16/17	Kaymen's Club of Japan Contest	CW
	30/31	ALARA Contest	CW/SSB

Welcome to this month's Contest Column.

A bit of a short one this month – work getting in the way of the more important things in life!

What are you talking about?

As with most hobbies and pastimes, we tend to get caught up with jargon and our own language at times. By way of clarification, over the page is a list of terms commonly encountered during discussions about contests or contesting.

It has been laid out so that you can photocopy it and add it to the shack notice board, more commonly known as the wall.

text continued foot of page 43

VK Entries for CQ WPX SSB 2009

No claimed scores for the contest are available as yet (at the time of typing this lot in anyway) so I will publish them as and

when I get my hands on them. The following VK stations have submitted a log for the contest – hotly contested as usual!

Callign	Operator	Transmitter	Band	Power	Assisted
VK6ANC	MULTI-OP	ONE	ALL	HIGH	ASSISTED
VK6AHR	MULTI-OP	ONE	ALL	HIGH	ASSISTED
VK4KW	MULTI-OP	TWO	ALL	HIGH	ASSISTED
VK1MJ	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK2CA	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK2HBG	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK2KDP	SINGLE-OP	ONE	ALL	QRP	ASSISTED
VK2KRM	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK2LET	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK3ALZ	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK3AVV	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK3IO	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK3NI	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK3TZ	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK3VTH	SINGLE-OP	ONE	20M	LOW	NON-ASSISTED

Callign	Operator	Transmitter	Band	Power	Assisted
VK3YXC	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK3ZGP	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK3ZPF	SINGLE-OP	ONE	20M	LOW	NON-ASSISTED
VK4ATH	SINGLE-OP	ONE	ALL	QRP	NON-ASSISTED
VK4BL	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK4EJ	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK4HG	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK4VDX	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK4XES	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK4ZD	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK5HRT	SINGLE-OP	ONE	ALL	HIGH	NON-ASSISTED
VK5NPR	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED
VK7ZE	SINGLE-OP	ONE	20M	HIGH	NON-ASSISTED
VK8HPB	SINGLE-OP	ONE	ALL	LOW	NON-ASSISTED

Contests — What ARE you talking about

a list of terms commonly encountered during discussions about contests or contesting.

- 10 minute rule** — refers to a limit on the number of band changes permitted in an hour or how long a station is required to operate on a band after making a band change
- 3830** — the Web site for reporting claimed scores after the contest
- Alligator** — a station whose signal is loud, but can not hear calling stations well. I think that this stems from old CB lingo — but I could be wrong
- Assisted** — the category in which it is allowed to use information from outside the station boundary about the operation of other stations; "assisted" has nothing to do with the actions of others that may assist the station or the operator
- Band change** — making a QSO on a different band than the preceding QSO
- BIP/BOP** — "Both In Phase / Both Out of Phase" referring to the phasing of signals to two antennas in a stack
- Bonus** — extra points added to a score for making a specific type of QSO or for contacting specific stations
- Breakdown** — a table showing the QSOs and multipliers worked on each band, also known as "hour-by-hour" or "band-by-band" or "HHBB" tables or sheets. It can also describe the operator when the results for a particular contest of interest are published and the penny drops that 10 m really was wide-open for the whole contest
- Busted** — a spot, call, or exchange that is determined to have been copied or logged incorrectly
- Cabrillo** — a log file format specification
- Checklog** — submitted logs that are only used in the log checking process and are not listed in the results
- Cheerleading** — spotting one or a few stations disproportionately, usually a club member or a friend
- Club circle** — a circle of a given radius that defines the maximum area for a contest club category
- Cut Numbers** — letter abbreviations for Morse numerals, such as N for 9, A for 1, etc.
- DQ** — disqualify as a result of rules violations
- Dupe** — a station that has been worked before and can not be contacted again for point credit
- DX alerting assistance** — any source of information that provides call signs, frequencies, and time of operation (such as a DX spot or local voice net)
- Error rate** — the total of QSOs determined to be invalid as a percentage of the total QSOs in a checked log less all duplicate contacts
- Exchange** — the information required to be exchanged in a contest QSO
- Fill** — repeat part of an exchange to replace missing or garbled information
- Grid circling** — the practice of rover stations meeting at the corner of four grid squares and working each other on multiple bands in rapid succession
- Grid square (locator)** — the identifiers of the Maidenhead Grid Locator system
- Hired gun** — a guest operator, usually referring to someone highly skilled
- Hold** — in reference to a frequency, to maintain a presence on a frequency by calling CQ
- LCR** — Log Checking Report, the output of the log checking process for a submitted log
- MO, MS, MM, MZ** — Multi-Operator, Multi-Operator Single-Transmitter, Multi-Operator Two-Transmitter, Multi-Operator Two-Transmitter
- Move** — in reference to station that counts as a multiplier, to coordinate a change to another band to contact them for additional multiplier credit
- Multiplier (Mult)** — special attributes, such as locations, which are multiplied with QSO points to determine score
- Not in the Log (NIL)** — a QSO that can not be cross-referenced to the submitted log of the station with which the QSO is claimed
- Off-time** — enforced periods of non-operation during a contest
- Packet cluster (or packet)** — originally a program written by AK1A (PacketCluster™) to allow DX and contest stations to share information (spots) via VHF packet radio systems about stations on the air, now generally refers to any source of spots, whether over the air or terrestrial networks
- Pass** — at a multioperator station, ask a calling station to work one of the other station operators on a different band
- Penalty** — QSO points removed during the log checking process in response to errors
- QSO Party** — a contest focused on a specific location or style of operating, generally of lower intensity than major contests
- QSO Points** — the point credit for a specific QSO
- QTC** — a list of logged QSOs exchanged during contests such as the Worked All Europe
- Rate** — the equivalent number of stations that would be worked in an hour, based on various time periods (last hour, last 10 minutes, last 10 stations, last 100 stations, etc)
- Rate sheet** — an output from contest logging software showing QSO rate versus time
- Reclassify** — changing of the category of a submitted log by the contest sponsor to correctly reflect the category of operation
- Robot** — a software program that processes logs submitted by email
- Rover** — a mobile station that operates while in motion or from multiple locations in a contest
- Run** — work stations by calling CQ, a run also means a steady stream of callers in response to CQs
- S&P** — search-and-pounce, the technique of tuning for stations to work instead of calling CQ
- Self spot** — spotting one's own frequency and call sign on a spotting network, generally prohibited by contest rules, including requesting to be spotted by another station
- Serial Number** — the sequential number of the contact in the contest. i.e. first contact, second contact, 199th contact, etc.
- Single band** — operating a contest exclusively on one band
- Skimmer** — software that extracts call signs and frequencies from a receiver's audio or IF
- SO, SOA, SOAB, SOSB** — Single Operator, Single-Operator Assisted, Single-Operator All-Band, Single-Operator Single Band
- SO2R** — Single-operator, two radio; the practice of using two radios to both call CQ and tune for stations at the same time, usually on different bands
- SPC or S/P/C** — State, Province, Country, the most common three location-based types of multipliers
- Spot** — an announcement of a station's call and frequency via a spotting network
- Spotting Network** — Any method of distributing information about the frequency and call sign of stations on the air, including voice, packet radio, or the Internet
- Sprint** — a short contest, usually six hours or less
- Stack** — a set of antennas for one band on a common tower or mast, used to increase forward gain and to control the vertical angle of radiation
- Sunday Driver** — casual operators that appear late in the contest (usually Sunday afternoon) to make a few QSOs
- Sweep** — to work all available multipliers
- UBN** — Unique, Busted, Not In Log, the three ways in which a QSO can be declared invalid
- Unique** — a call sign that was not in any other submitted log (QSOs with unique call signs are generally accepted at face value by the sponsors, but excessive numbers attract scrutiny)
- Unlimited** — In Sweepstakes, Unlimited category is the same as SOA in other contests
- WARC bands** — refers to the amateur bands allocated during the 1979 World Administrative Radio Conference; 30, 17, and 12 meters (also sometimes used to refer to the 60 meter band)
- Zone** — an area defined by contest sponsors, such as the ITU or CQ Magazine

John Moyle Memorial National Field Day 2009 — Results

Denis Johnstone VK4AE/VK3ZUX

Contest introduction

Welcome to the John Moyle Memorial Field Day. The field day was held over the weekend of the 14 - 15 March, 2009 from 0100 UTC on Saturday till 0059 Sunday.

The WIA and I would like thank all entrants who took part and submitted logs. Perhaps next year more contestants who have gone to the trouble of taking part as a portable station will actually submit their log!

Aim of the contest

The aim is to encourage and provide familiarisation with portable operation, and provide training for emergency situations. The rules are therefore designed to encourage field operation.

This year's winners

In 2009, a total of 123 logs were submitted, 62 portable station and 60 home stations.

The highest scores in each category were as the table.

Editor's Note: A complete list of all results, together with a detailed set of comments from Denis, can be found on the WIA website at.

<http://www.wia.org.au/members/contests/johnmoyle> Scroll down to page to download to find the link to the 2009 results file.

24 Hour Portable Operation – Multiple Operator

VK3ER	Multi Operator, All Mode, All Band with 589 contacts and a score of 4,573
VK3FRC	Multi Operator, Phone only, VHF with 225 contacts and a score of 3,004
VK3CNE	Multi Operator, Phone Only, All Bands with 387 contacts and a score of 2,364
VK2AWA	Multi Operator, All Mode, HF with 1465 contacts and a score of 3,774
VK2AWX	Multi Operator, Phone only, HF with 581 contacts and a score of 1,162

24 Hour Portable Operation – Single Operator

VK4OE	Single Operator, Phone only, All Band with 174 contacts and a score of 2,057
VK3DAG	Single Operator Phone VHF with 77 contacts and a score of 1,510
VK4HAM	Single Operator Phone HF with 427 contacts and a score of 854
VK1WJ	Single Operator Digital HF with 17 contacts and a score of 30

Six Hour Portable Operation – Multiple Operator

VK3AWS	Multi Operator Phone All Band with 274 contacts and a score of 1,119
VK4WIM	Multi Operator Phone HF with 61 contacts and a score of 118

Six Hour Portable Operation – Single Operator

VK5ZT	Single Operator Phone Only, VHF with 38 contacts and a score of 252
VK4ADC	Single Operator Phone Only, All Band with 152 contacts and a score of 581
VK3HJA	Single Operator Phone Only, HF Bands with 145 contacts and a score of 290

Home Station – 24 Hour

VK4VDX	Home Station Operator with 437 contacts and a score of 633
--------	--

Home Station – 6 Hour

VK2KDP	Home Station Operator with 169 contacts and a score of 255
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Shortwave Listener - 24 Hour

Bill Cousins ZL2AYZ - Portable from Houghton Bay (Wellington) with 230 points and 115 contacts logged

continued from page 41

CQ WPX CW Results for 2008

Congratulations to the following VK stations:

W6/VK2IMM	150,282	VK6DXI	1,574,482
VK2AEA	928,501	VK7GN	143,620
VK2GR	27,594	VK8AV	44,144
VK3TDX	14,632	VK6DXI	1,574,482
VK4TT	117,068	VK2CCC	9
VK4BUI	239,184	VK3FM	98,890
VK4BAA	192	VK3KE	23,256
VK5SW	810		

If you have any contest related material for inclusion within the column, topics that you would like covered or even some experiences and pictures you would like to share, then please feel free to get in touch via vk4baa@wia.org.au. See you on the bands.

73 de VK4BAA Phil Smeaton.

ar

News from

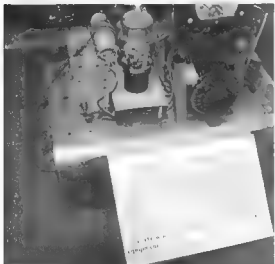
Justin Giles-Clark VK7TW
Email: vk7tw@wia.org.au
Regional Web Site: reast.asn.au

VK7

ANZAC Day reminds us of stories of ordinary people doing extraordinary things.

In World War II Signalman Max (Joe) Loveless VK7ML SK was a signals operator with "Sparrow Force" behind enemy lines on Dutch Timor with the AIF.

Sparrow Force was deficient in supplies, communications equipment had been destroyed and they were out of touch with Australia and it was imperative to re-establish communications. This fell to the men of the 2/2nd Australian Independent Company, including Signallers Max Loveless and Keith Richards, assisted by Jack Sargent and John Donovan.



Replica of Winnie the War Winner at Anglesea Barracks Military Museum, Hobart.



Corey VK7FCJC and his recently constructed LED Collsign panel (photo by VK7DY).

They built from scrap and other equipment what was affectionately named "Winnie the War Winner" after Winston Churchill and they contacted Darwin on the 20th April 1942 to let them know the Australians in Timor were alive and well. The original transmitter is in the National War Memorial in Canberra and a replica is in the Anglesea Military Museum in Hobart thanks to Barry Riseley VK7RS who worked with Max.

Repeater Upgrade

The Barren Tier repeater VK7RIN has been upgraded thanks to Brian VK7RR, Joe VK7JG and Paul VK5BX. The replacement antenna is back on top of the tower, the battery backup system replaced and new feeder installed. Thanks to Paul who is an experienced communications engineer, for his help whilst he was in VK7 on holidays. There is a definite improvement.

North West Tasmanian Amateur Radio Interest Group

The noise on Mount Duncan repeater VK7RMD has been found to be caused by corrosion on the tower. Any slight movement can be heard as severe noise in the receiver. The group is working toward separating the receive and transmit antennas and ensuring that the receive antenna is well away from corroded parts of the tower. Stay tuned for more news in future.

Great Southern Winter Hamfest

The Great Southern Winter Hamfest happens on June 6th and 7th and it is a Sorell Men's Shed Event "Community Project". Saturday will see workshops on antenna construction and field strength testing, satellite dishes and optical

communication. Saturday night will see VK7SMS active with awards for contacts Sunday will be show and tell, homebrew and pre-loved equipment sale. There will be a BBQ lunch and a few raffles with all proceeds going to the Men's Shed. See their website for more details: <http://www.sorellmensshed.org/>

North West Tasmanian Amateur TeleVision Group

The Club is recording the VK7 Regional News Broadcast for later mp3 download or streaming. See the website for more details at <http://www.vk7tax.id.au/spectrum> The general meeting on April 4 saw the club rules adopted and a repeater committee formed. The meeting finished up with a talk and discussion from Ron VK7RN on the history of both Amateur Experimental and Broadcasting Stations in the North West during the period 1921 - 1937.

Radio and Electronics Association of Southern Tasmania

The ATV Experimenters' nights have been very well attended with signals going out on both analogue 70 cm and digital 23 cm ATV. The range of topics and presentations is broad and have included - how an Adcock direction finding antenna works, how a fluxgate compass works, the construction of a 80/40 m one transistor QRP transceiver called "The Gnat", using a GDO for ferrite/powdered iron toroid testing and discussions from a 1924 "Boy's Wireless Book", just to name a few topics.

We have many special guests who we interview on air including our regular serviceman interview with Graham VK7ZGK who describes the many pieces of interesting equipment that he gets to fix and service. Another great interview recently was with F-Call holder Corey VK7FCJC who built a LED Collsign panel and Corey described its construction.

ATV Experimenters' nights happen each Wednesday night from 7:30 pm except the first Wednesday night of the month. See you there. <http://reast.asn.au/events.php#ATVnights>

Silent Key

Peter Clark VK7PC

Peter John Clark, born 26th of January 1948. After a long difficult battle with cancer, Peter passed away peacefully on the 8th May 2009 in the St. Helens Hospital.

Peter first became licensed in April 1979 and was very active on the bands, particularly 80 and 40 metres, from his home QTH in Launceston and in latter years at Scamander on Tasmania's East Coast, and portable from his weekend at the Great Lake.

Peter was very much the night owl and enjoyed a good old rag chew with his many amateur radio friends.

Peter was a glazier by trade and I can still fondly remember sitting in awe of his skills in the shack of the late VK7NBF Bob Jackson from Falmouth, Bob had broken the glass face on his barometer and Peter deftly cut a piece of glass in seconds to restore the instrument to working order.

He was Vice President of the Central Highlands of Tasmania Amateur Radio Club and a great supporter of our various activities and his cheeky grin and good natured camaraderie will be sadly missed by his many amateur radio friends.

Peter is survived by his wife of 40 years Sue, his two daughters Tania and Amanda and Grandson Kodie.

Vale Peter.
Inserted by Dave O'Brien VK7KDO on behalf of the Central Highlands of Tasmania Amateur Radio Club.

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Shack in a 'shed' at Sorell

There are many shacks in a shed but the Men's Shed at Sorell in Tasmania is the only Men's Shed in Australia to have its own shack and call sign, VK7SMS.

Men's Sheds are gaining credence as a community place for men of all ages to gather and do 'blokey' things such as Woodwork, Metalwork, Restoration of old cars, machinery and museum pieces, Electronics, Amateur Radio, Alternative energy, to name a few.

But it is the companionship and contacts, so often missing in the world of the Australian male, that is important.

The Men's Shed at Sorell, only months old, is running its inaugural hamfest and contact award with D-Day being the 6th of June.



Corey VK7FCJC in the shack at the Sorell Men's Shed

GREAT SOUTHERN WINTER HAMFEST

Inaugural Hamfest at Sorell Men's Shed VK7SMS

June 6 and 7

Hands On and On-air Award contact on Saturday.

Trade, buy and sell, show and tell on Sunday.

Home brew Prizes Skills workshops On-site Camping

VK7SMS will be conducting an on air award from 6pm till 12pm EST on HF,VHF and UHF on Saturday. One contact will qualify for the

'Worked the Sorell Men's Shed' Award.

Full Details from Ken Sulman VK7DY 0409 136 268

E-Mail: ken@sorellmensshed.org

www.sorellmensshed.org

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DX - News & Views

John Bazley VK4OQ

email: john.bazley@bigpond.com

VK9 territories, Seychelles, island shores and UAE sand

After the harrowing time that the VK9GMW 'boys' had getting to **Mellish Reef**, it was good to get the following report.

We are underway now, April 14th, about 30 nautical miles from Marion Reef. We will stop at the Reef for about six hours: lunch, a quick dive, and then get going again. We cannot leave earlier as we must arrive at the Great Barrier Reef mid-morning so we can see the coral heads and safely navigate around them. We expect to be in port by Thursday evening April 16th. The weather is perfect, almost no wind, and the sea is flat and very comfortable. I guess we have earned it by now.

We timed our departure well and hit the WX window perfectly. It was blowing very hard and raining most of the day we closed the station down, and it continued blowing at 25 knots during most of the night. The wind started dropping and by the morning was down to 15 knots when we got under way at about 0800. It kept gradually dropping to around 5 knots during the following evening and remained calm all night. In any case, we were going with the weather (i.e. it was coming from behind the boat) and things were comfortable from the outset. By the morning the sea was placid, making for a very beautiful sunrise.

Originally we had planned to stop at Marion Reef for a day and a night of rest, but we needed to take advantage of the weather while it lasted, so we are going all the way to Airlie Beach.

They made 20,058 QSOs (2,028 of which were on 160 metres). The Online QSL Request System (OQRS) has been activated for both direct and bureau cards (check <http://www.vk9gmw.com> for details). The ordinary QSL route is via HA7RY.

VK9LA band and mode statistics for the 22nd March to 3rd April expedition to Lord Howe Island can now be found at <http://www.odxg.org/vk9la.htm>. The most productive band was 40 m (9111 QSOs), followed by 20 m (6714 QSOs) and 30 m (4458 QSOs). The grand total

is 30,160 QSOs (18842 CW, 9261 SSB and 2057 RTTY).

Well we certainly have done well with VK9 activity over the past few weeks with VK9M / VK9N / VK9L / VK9X.

So what is happening further afield?

It seems the YW0A DXpedition to **Aves Island** (YV0) continues to be delayed. Their website (www.yw0a.4m5dx.info) reports the Venezuela Navy schedule would keep them on the island for "no less than 30 days". None of the operators or for that matter the entire team has that much free time! The team is hoping for a 7 to 12 day window.

K3IXD, K4QO, W2GJ and W3PP will be active from **Crooked Island** (NA-113), Bahamas from 23rd to 27th July. They will participate in the IOTA Contest as C6APR; before and after the IOTA event C6APR will be on 80-10 metres CW and SSB. The team will sign C6AXD on RTTY and C6AAQO on 6 metres (grid FL22). The calls are good for **Bird Rock Lighthouse** (ARLHS BAH-005). All QSLs via K3IXD.

Ramon DU1UGZ will be active as S21UGZ from **Dhaka, Bangladesh** until the 20th June. He operates in his spare time using a low band dipole. For the time being, he will focus on 40 and 80 metres SSB and RTTY, but, hopefully in May he should get a beam for 10, 12, 15, 17 and 20 metres and possibly a linear amplifier as well. QSL via home call.

Eight members of the "NA-128 Contest Group" (VA2RC, VA2ZO, VE2EDA, VE2EBK, VE2FSK, VE2TKH, VE2MTK and VE2QRA) will be active as CG200I from **Ile Verte** (NA-128) on 23rd to 26th July, including the IOTA Contest.

This special callsign celebrates the 200th anniversary of the lighthouse located on the island, and the group will operate many stations from the lighthouse keeper's quarters. Look for them on 160-6 metres all modes. QSL via VE2CQ, direct or bureau. Further information can be found at www.qrz.com under CG200I.

S79DF is Davide IZ3EFL, who is in the **Seychelles** for about one more year and is planning for a future trip to **Aldabra Island** (AF 025). Davide is a cook at a restaurant and is only QRV in his spare time and currently active only on 20 metres using a dipole. QSL via IV3TDM.

World traveller Wayne W5KDJ is heading next to **Madagascar**. He will be QRV as 5R8KD from July 1st to 15th, plus or minus a day or two. Wayne will be operating on 1.8 through 50 MHz on CW and RTTY. QSL via W5KDJ, including LOTW and eQSL.

John KB4CRT is heading back to **Montserrat** and plans to be QRV as VP2MRT from June 11th to 21st. Activity will be on CW, SSB and maybe even some PSK. He will be looking for Asian stations on 20 metres between 1200 and 1300Z. He will have an FT-897 and PAC-12, 40m inverted V, QSL via KB4CRT.

Czech operators OK1JK, OK1JST, OK1IPS and OK1IEC will be QRV as JW/homecall from **Longyearbyen, Spitsbergen Island** (EU-026), Svalbard, between June 5th and 15th. They will be on all bands on CW, RTTY, PSK and SSB. More details can be found on their Website at: <http://jan.kepic.cz/view.php?cisloclanku=2009030003> QSL via the operator's homecall.

continued next page



Nigel G3TXF operating from VK – part of his recent DX tour also covering YJ, FK and VK9/N

PRC busy on European and American hemisphere sites

I am still finding 40 metres very interesting with propagation changing by the hour. In early April, I was hearing short skip late at night. I was somewhat startled to hear VK7s in the south, pinning my needle. Then there was Gerry VK2APG in the Snowy Mountains working in Europe and North America, both on long and short path.

Just a few days later propagation lengthened and there was no sign of any signals in south-eastern Australia. VK6 and ZL were strong and dominating the band around 2100 to 2200 and again around 1100. VK4s also seem to hang in to mid-morning as they usually go by 2100. There is a daily ZL net around 7085 at 2130 and it can be quite good.

Since the majority of broadcasters vacated between 7100 and 7200, amateurs are discovering that there is plenty of DX about and now that it is

midwinter, I am expecting that there could be 24 hour propagation.

Yes there are still some broadcasters there and they seem to be the same ones I mentioned last month. The Chinese station on 7125 is in Xizang province in north-western China and relays the Minorities Network, known as CNR8. It seems to run for almost 24 hours, only off between 1600 and 1800. 7105 runs a carrier and modulation is well down yet I have heard Chinese.

I am unsure if it is Mainland China or Taiwan but think the latter, although not a member of the ITU, has shifted into the normal broadcasting segments. However I have noticed a sub-audible heterodyne which indicates that there may be other stations present. This may be in Ethiopia or Eritrea in the Horn of Africa.

China seems to have the largest number of active broadcasting senders on

shortwave. Not only do they have many sites in the PRC, but they also use sites in Canada, Cuba, Mali, Luxembourg, Finland, French Guiana, Brazil, and Albania. They also were on a sender in Estonia, yet it is unclear why they ceased there. Instead they leased the former MW senders in Pori, Finland, for broadcasts in German and Polish. The former Radio Luxembourg frequency of 1440 kHz is used for the UK and the Benelux countries. I have found that China Radio International (CRI) is the easiest station to hear on shortwave.

Radio Japan is on 13640 in English at 2100. I heard a talk by a female saying the source of most obesity is because people do not chew for long enough! Well that is all for this month.

Do not forget you can email me at vk7rh@wia.org.au



DX - News & Views continued

OY/IW4BLZ, operator Maurizio, will be on the **Faroe Islands** July 27th to 29th and Iceland with the call sign TF/IW4BLZ July 31st-August 11th. Maurizio will operate on 80-6 m. QSL to his home call, direct or bureau.

An **Isle of Man** operation planned for July 25th to July 26th is GD0F for the IOTA Contest. GM4AFF, Stewart, will be single operator all band SSB. QSL via MOCMK.

Special call sign VE7IYOA will be on in June and particularly for the ARRL/CRRL Field Day June 27-28 from Victoria, **British Columbia**. The call sign will commemorate the 400 years since Galileo's first use of a telescope to view the stars. The special suffix stands for the International Year of Astronomy. Most activity will likely be in the evenings and at weekends. QSL via VE7DAO. <http://www.hamiya2009.info/ve7iyoa.html>

LJ2T was the call sign of the Radio (Telegraphers) School (Radioskolen) of the Norwegian Army's Signal Corps from 1945 to 1982. The **Signal Corps**

Museum of the Norwegian Armed Forces (Modellkammer Joerstadmoen Sambandsmuseum) has been given permission to use this call sign from 19 to 28 June 2009, in connection with the International Museums Weekends. The Station Manager is LA4LN. The QSL Manager is LA5EAA.

MM3M is a nice call from the **Isle of Arran**, Scotland, (EU-123), for the RSGB IOTA Contest July 25th to 26th. Outside the event, operators G3VCQ, M3VCQ, M0GAV, 2E0JOX and 2E0TJX will use the call sign GS3RCM/p. QSL via the RSGB bureau or direct.

Another (EU-123) operation will be from the **Isle of Bute** again during the IOTA Contest. GM0B will be the call sign for MM0BHX, MM0GPZ, GM0LIR, GM0QV and GM0NB. QSL via MM0BHX.

The K5D (**Desecro Island**) website reports that N2OO and his SJDXA team are "getting ready to start pre-processing the QSL requests". All received envelopes have been opened and sorted. Their OQRS is working and they have started pre-processing them. The K5D QSL cards are expected to

begin to be sent out in mid-June.

The Daily DX reports that a few A65 call signs have been issued to foreign residents in the **United Arab Emirates** (A61 is for UAE nationals, A62 for clubs and A60 for special event stations): G4BWP is A65BD (QSL via G5LP), G3XHZ is A65BE (QSL via G3XHZ), G4THN is A65BF, PA5M is A65BG (QSL via PA7FM), F8CUP is A65BH (QSL via F8CUP), F5LTB is A65BK (QSL via SM5DJZ). Still on the subject of A6, N15DX is now the QSL manager for Kahlid A61BK. Kahlid has already sent his log files, but there will be a delay in replying until the new cards arrive from the printer. This is indeed good news for those chasing QSL cards.

Good luck in the pile-ups until next month.

Special thanks to the authors of *The Daily DX* (W3UR) -- 425 *DX News* (11JQJ) and *QRZ DX* for information appearing in this month's *DX News & Views*. For interested readers you can obtain from W3UR a free two-week trial of *The Daily DX* from www.dailydx.com/trial.htm



Antenna polarisation and other news

A mixed bag this month. Something old, something new, something altered, something to do. AO-7 chalks up another milestone. India's digital satellite ANUSAT launched Addendum to April's column and control codes for COMPASS-1.

But first, antenna polarisation.

Satellites and their antennas

The antennas used on the amateur satellites come in various configurations. Here I present a short article on antenna polarisation and list the current popular satellites in use and their antennas.

To get the best signal from transmitter to receiver, both of the antennas should have the same polarisation. Good examples are repeaters which use vertically polarised antennas. While you can access a repeater with a horizontally polarised antenna, you will notice a significant decrease in signal strength. In a worst-case scenario where the antennas are aligned 90° to each other (i.e. one is vertical, the other horizontal), the loss of signal is 20 dB (1/100th the power or 3-4 S points).

For satellites there are two main types of antennas used linear and circular. Linear antennas are the common whips, dipoles and Yagis used for terrestrial use. The fields generated are fixed in direction.

Circular antennas generate a field that is continually changing. Common types are helices, Lindenblads, and cross polarised Yagis. Circular antennas have 'sense' in that the changing fields rotate in one of two directions.

A simple way to picture this is to look at nuts and bolts. Grab a bolt and put a nut on it. Point the head of the bolt closest to yourself and start taking the nut off. For a common right hand thread combination the nut has to be turned clockwise to remove it from the bolt.

If you use a left hand thread (such as on a gas bottle) the nut has to be turned anti-clockwise to remove it. Also it is impossible to screw a left hand thread nut on a right hand thread bolt (without ruining one or the other).

The same goes for circular antennas. If you look from the reflector of a helix antenna and the electric field rotates

clockwise as it moves along the helix then it is Right Hand Circular Polarised (RHCP) signal. This is how the Institute of Electrical and Electronics Engineers define circular polarisation in their standard publication, "IEEE Standard Definitions of Terms for Antennas STD-145".

Similar to the mismatch of threads, using a RHCP antenna at one end and a Left Hand Circular Polarised (LHCP) antenna at the other end also results in a signal loss of 20 dB. If the antennas are the same polarisation but are not pointing directly at each other there will be a mismatch. The polarisation becomes elliptical; a mixture of linear and circular.

Cross Yagi circular polarised antennas can be switched between RHCP and LHCP using relays and phasing lines. Helices and Lindenblads cannot be changed, you need one of each polarisation for best performance.

But here is the clever bit you cannot do with nuts and bolts. If you have a linear antenna at one end and a circular antenna at the other, the signal loss is only 3dB

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skids' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater on 146.850 MHz

VK2RIS Saddleback repeater on 146.975 MHz

VK2RBT Mt Boyne Repeater on 146.675 MHz

In Victoria

VK3RTL Laverton, Melbourne, 438.600 MHz

FM, - 5 MHz offset

In the Northern Territory

VK8MA Katherine 146 700 MHz FM

In South Australia

VK5TRM Loxton on 147 125 MHz

Operators may join the net via the above repeaters or by connecting to EchoLink on either

the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

AMSAT-VK HF net

Members and interested parties are also reminded of our HF net which is held on the 2nd Sunday of each month. See www.amsat-vk.org for details.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

($\frac{1}{2}$ the power or only 0.5 S-points). The polarisation of either antenna does not matter in this case.

This is especially useful with satellites as they are continuously changing their antenna orientation throughout a pass.

Users of SO-50 with hand held linear Yagis will know they have to rotate their antenna during a pass to receive the best signal. SO-50 has a linear antenna for its 250 mW 70 cm downlink. If your antenna is pointed 90° to SO-50's, it is the same as hearing it transmitting at 2.5 mW.

If you use a circularly polarised antenna, you will lose half the signal but you will not have to rotate the antenna at all. The same applies to using a linear antenna on the ground to a circular polarised antenna on the satellite.

Below is table of most of the popular satellites currently in use for analogue or digital communication.

AO-7 uses a linear whip for 10 m, and circular polarised antennas for 2 m and 70 cm. The 2 m receiver is RHCP for mode V/H. The 70 cm receiver and 2 m transmitter uses LHCP for mode U/V.

FO-29 uses circularly polarised antennas for 2 m and 70 cm. Due to its motion in space the polarisations change throughout a pass.

GO-32 uses linear whip antennas for the 2 m and 23 cm receivers and circular polarisation for the 70 cm transmitters.

SO-50 uses quarter wave linear whip antennas for 2 m and 70 cm.

AO-51 uses a 2 m linear whip antenna for its 2 m and 10 m receivers. The 70 cm transmitters use circular polarisation. The 23 cm receiver and 13 cm transmitter use linear whip antennas.

VO-52 uses circular polarisation for 2 m and 70 cm.

CO-65 uses linear antennas for the 23 cm receiver and 70 cm transmitter.

The International Space Station uses linear antennas. In the future it will use patch antennas for 23 cm and 13 cm and they are RHCP.

All this shows that different satellites use different antennas and factors you must consider to get maximum benefit from them. Researching this gave me some idea why I cannot hear some of them as well as I might with my linear Yagis.

The inspiration for this article was "The Case for Polarisation Switching", by Jim White W0DE. Jim was a ground controller for AO-40 and has been involved with many of the digital satellites

including AO-16 and AO-51. In his 1997 article, he explains the benefits of being able to switch between different antenna polarisations. The satellites he wrote about have all gone silent key so this article brings the idea up to date.

AO-7 lasting longer the second time

Way back in June 1981, the "last" QSO was recorded through AO-7. This was after 6.5 years of service since its launch in 1974. Weak noise was heard from the transponder up to August 1981 until the batteries finally succumbed and AO-7 went silent.

June 2009 marks 7 years since AO-7 came back to life. Despite its sometimes unpredictable behaviour and the need for it to be in sunlight, nearly 50,000 QSOs have been logged on the AO-7 logbook website in the past 6 years. It has a loyal following and is currently our highest operating satellite. May it continue for many more years.

See <http://www.planetemily.com/ao7/main.php> for more information on AO-7.

New Digital Satellite Launched

On 20/9/2009 ANUSAT was launched from the Indian Space Research Organisation (ISRO) Satish Dhawan space centre. ANUSAT was constructed by the Anna University in Chennai, India and is the first Indian university satellite. Its primary payload is an amateur radio store and forward transponder. No frequency details have been released at the time of writing but from the information published the following is known. ANUSAT is a 600 mm cube with a mass of 40 kg, putting it in the Microsat class. Its orbit has a 400 km perigee and 550 km apogee at an inclination of 41°. The inclination means its lowest latitude is over Bass Strait. It has an estimated lifespan of two years. UO-9 was launched into a similar altitude and lasted around 8 years before re-entry.

The transponder will have an uplink in the 2 m band and a downlink in the 70 cm band. No modulation details have been released. It also has a telemetry beacon on 137.400 MHz and this beacon's carrier signal has been observed by amateurs. Stay tuned for more.

SOHLA-1 Status

In my April column I mentioned that one of the JAXA launched satellites, SOHLA-1, will carry an amateur radio digital transponder. The transponder has been tested over Japan but is unable to be turned on during a whole orbit. However, another satellite by the Osaka Prefecture University is planned for launch in 2013. Thank you to Mineo Wakita JE9PEL for this news.

And one for the control freaks out there.

April 2008 saw the successful launch of several Cubesats that are still in operation today. To celebrate one year in orbit the ground controllers of COMPASS-1 have issued 3 command codes that amateurs can send to the satellite to solicit a response. These are the DTMF sequences to be transmitted on 145.980 MHz FM:

*335# - request a test beacon CW

*36## - request a test packet 1k2 AFSK FM (UI-Frame)

**60## - request a housekeeping frame in 1k2 AFSK FM (KISS frame)

Every command will be confirmed with a short "beep" on the CW frequency of 437.275 MHz. Alan ZL2BX has been commanding COMPASS-1 and said that the satellite may not give a response on the packet downlink each time a command is sent. The frequency for packet radio downlink is 437.405 MHz. Mike DK3WN has decoding software for the CW telemetry at <http://www.dk3wn.info/software.shtml> The CW is 'chirpy' and normally a frame is transmitted every 3 minutes.

If you do try these commands and get some telemetry the ground controllers would be happy if you emailed the received data to compass1cubesat@googlemail.com

Thank you to Kevin DG9KK and Mike DK3WN for this news.

Final comments

During April it was good to read on the AMSAT-VK mailing list that some amateurs were successfully using the 1268.700 MHz uplink to AO-51. Later that month there was good activity with the 2401.200 MHz downlink using mode V/S.

Next month I will be presenting a fully updated 6 monthly satellite review.

VHF/UHF – An Expanding World

David Smith VK3HZ
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Weak Signal

David Smith VK3HZ

There is not a great deal to report this month of enhanced propagation conditions. There have been a number of periods of low-level enhancement corresponding to high-pressure cells moving across the south of the country. However, no contacts of note have been made.

At this time of year, because of the quieter conditions, many people seem to shut up shop on VHF/UHF, even to the extent of pulling down the antennas. However, there are still lots of opportunities for long-distance contacts, independent of the weather conditions. You just need to know where to look.

As an aside, newcomers to our hobby tend to be introduced to the VHF/UHF end of the spectrum with a handheld and a few contacts on the local repeater.

Perhaps they might try some simplex contacts. Anything beyond 100 km is considered DX. They do not realise that there is a whole 'nother world out there at the weak signal end of the band.

So, I thought I should give a brief explanation of the possibilities of weak signal communication on the 2 m band, starting from (relatively) close in and working outwards in distance.

Starting with station setup, weak signal work does not necessarily require a super station. Many of the commercial manufacturers have in their range a multiband HF/VHF/UHF rig that is good for this usage – the Yaesu FT-847/857/897, Icom IC-706/7000/7400, Kenwood TS-2000 etc.

Then you need a 10-12 element Yagi (horizontally polarised, of course) mounted on a rotator. A run of RG-213 coax connects back to the rig. If the bug takes you, then down the track you can add a power amplifier, masthead preamp, multiple Yagis and a length of Heliax to the list.

With this simple setup, we can work another similarly equipped station up to 300 km away in normal conditions via troposcatter. This assumes that both stations have a reasonable takeoff – no big hills in the way. If the band opens (a

tropospheric duct forms), then distances of 2000+ km are quite possible – from Melbourne to Albany, WA or from the east coast across to NZ. If the opening is via Sporadic E, then even longer distances are possible (VK5 to ZL).

However, for much of the time, the band is not open (some of the more paranoid among us believe that the band does not open BECAUSE they are in the shack). So, what to do in these conditions?

If you are interested in working into areas up to 900 km from you, then Aircraft Enhanced Propagation (AEP) is a viable method of doing so. With AEP, signals can rise from inaudible to S9 in the matter of minutes, and disappear just as quickly.

AEP relies on there being an aircraft in line between you and the other station, visible (in the RF sense) to both of you. Then the phenomenon of Bistatic Radar comes into effect and boosts the signal.

Many of us experience AEP fairly randomly on signals. However, there are ways of accurately predicting AEP by finding out aircraft positions, either using your own ADS-B receiver to receive position reports from aircraft in the vicinity, or by using a program like PlanePlotter to get position information from a server.

Then using Google Earth and the Radio Site Display (RSD), we can overlay the path between stations with the aircraft positions and see when AEP will occur.

For a good starter paper on AEP by Mike VK3KH, together with information on RSD and Planeplotter, see www.vk3hz.net

2 m AEP sessions between Melbourne, Canberra, Sydney, Brisbane and beyond are held every morning on 144.2 MHz between 0800 and 0900 EST, corresponding to peak period for aircraft traffic between those cities.

AEP is not just limited to the 2 m band either. AEP contacts have been achieved on 70 cm, 23 cm and 13 cm and I have seen what I believe was very brief AEP on 10 GHz. Enhancement tends to

become briefer but more intense with increasing frequency.

If we want to work further than 900 km, then Meteor Scatter (MS) is possible for distances from about 800 km up to 2400 km. Using SSB via MS is possible but you will need to be extremely patient as the longer meteor burns required for such a contact are very few and far between.

Ron VK4DD has been heard in Melbourne via MS on numerous occasions during the morning AEP sessions. Each time, he is inundated with replies, but the meteor has moved on before any contact can be made.

If you really want to exploit MS, then the WSJT FSK441 digital mode is the way to go. You will need a PC and an interface to your rig to use this. Rex VK7MO regularly reports on activity in this area in his Digital DX Modes piece below. More information can be found at: www.vhfdx.radiocorner.net/docs/FSK441-Proc.pdf

Unlike AEP, 2 m is the practical upper limit in frequency for MS. The pings become extremely short on 70 cm. However, it is not impossible and is perhaps an area for further investigation.

If you want to go beyond 2400 km, then EME (Moon bounce) is a possibility. An average-to-large tropo station can make contacts via the moon using the WSJT JT65 digital mode. For more information, see: www.vhfdx.net/jt65bintro.html

So, as you can see, there are plenty of ways to use your station, even if the band conditions are lousy.

Beacons

Mark VK2XOF reports that the last of the VK2RSY beacons at Dural has been successfully replaced with new equipment. The beacon on 432.420 MHz joins the 2 m (144.420 MHz) and 23 cm (1296.420 MHz) beacons. Congratulations to all who put the effort into resurrecting these beacons. Reports would be very welcome.

144.150 Net

The weekly net in Melbourne on 144.150 MHz on Wednesday evening at 2030 EST continues to be popular. Mike VK3KH and Rob VK3MQ are the net controllers. Both have good locations in the Melbourne area and coverage regularly extends from VK3 into VK1, 2, 5 and 7. On a recent net, participating stations included VK5GF, VK5HR, VK5DK, VK7JG, VK3KH, VK3MQ, VK3NP, VK3ACA, VK3IDL, VK3AXH, VK3KQB, VK3CMC, VK3IL, VK3HV and VK3ZYC. If you have nothing else on, call in and join the fun. For more distant stations, use the VK Logger to make the net controllers aware of your presence so they can swing their antennas in your direction.

GippsTech 2009

A reminder that GippsTech 2009 is to be held over the weekend of 11-12 July. This is THE event for the weak signal enthusiast and should not be missed. I suggest arriving on Friday afternoon to join in on the informal Friday night meal at the Morwell Hotel Motel and catch up with other like-minded amateurs.

Then the action commences at 9 am on Saturday with a solid program of presentations on a wide variety of topics. The Saturday night dinner is another opportunity to catch up with people. Then Sunday morning sees the program continuing up to the lunchtime conclusion. More information at: www.vk3bez.org/gippsstech.htm

I had the pleasure recently of attending the GippsTech – Special Edition (a.k.a. GT Lite) held in conjunction with the WIA AGM. As well as some repeat presentations from past GippsTech events, the program was expanded to include Software Defined Radio VLF and even Amplitude Modulation! All presentations were of a very high standard and it was very interesting to see the multitude of directions people are taking in the technical side of our hobby. Well done to all involved in organising and running the event.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur VK7MO

ZL provides the opportunity for many on the east coast of Australia to try out long distance meteor scatter on two metres using the WSJT program and FSK441 mode. A VK-ZL activity session is held each Saturday morning from 0600 to 0700 local time in VK1/2/3/7 on 144.330 MHz with ZL transmitting first period. Active ZL stations are listed below:

Station	Location	Approx Take-off Angle
Bob ZL3TY *	Greymouth	Zero degrees
Starr ZL3CU *	Christchurch	1 degree
Peter ZL4LV *	Dunedin	2 - 4 degrees
Dave ZL4DK *	Dunedin	1 - 2 degrees
Bob ZL1RS #	Bay of Islands	Less than 1 degree
* Regular operators during activity sessions		
# Need to set up a sked but can work from North of Brisbane down to Sydney		

Under normal conditions the maximum range is 2400 km less around 100 km for each degree of take-off angle at each end of the path. Bob ZL3TY is both the closest station and has the best take-off and is regularly worked from Hobart and Canberra, often from Sydney and occasionally as far North as the Queensland border for stations with a good take-off. Starr ZL3CU is regularly worked from Hobart. The ZL4 stations work occasionally into Hobart. Bob ZL1RS has worked John VK4JMC west of Brisbane. To decide if it is worth a try, determine your own take-off angle, subtract 100 km for the total take-off angle of both stations from 2400 km to give you approximate maximum distance and see if the station is within this range. The range of a station can be worked out using the grid locators of both stations as can be obtained on the VK logger and inserting this data in the WSJT program.

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

The Magic Band – 6 m DX

Brian Cleland VK5BC

April has been another quiet month on 6 m with very little to report

From far north Queensland, John VK4TL reports they have been hearing quite a few indicators with the Chinese TV signals being up to \$9 on 49.750. On the 20th April John worked 16 x JA stations (TEP) and Trevor VK4ZFC worked 12 x JAs. On the 23rd John worked another 2. Generally though John says TEP on 6 m has been poor.

Locally there have only been a couple of 'E' openings. On the 13th April Wade VK4ACB in Hervey Bay worked Norm VK3DUT, Mike VK3ALZ and Glen VK7AB and a little later a brief opening from VK4 to VK5 when Brian VK5BC/p at Comy Point worked Scott VK4CZ, Brian VK4QB and Doug VK4ADC.

Then on 19th April, a good opening from VK6 to VK5 when the band opened for nearly 2 hours but unfortunately not many stations were listening. Brian VK5BC/p at Comy Point worked John VK6JJ, Peter VK6KXW and Allan VK6ZWZ.

Only other point of interest has been the regular reporting of the VK5RBV Barossa beacon, usually early in the morning by Brad VK2GWB south of Wollongong, Scott VK4CZ Brisbane, Brian VK4QB Rockhampton and Peter VK6KXW Beverley. They all have reported hearing or getting regular bursts from the beacon. Seems this beacon is well located for all areas of VK.

Please send any 6 m information to Brian VK5BC at briancleland@bigpond.com

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Book Review

Peter Freeman VK3KAI

Review of *Microwave Projects 2* Edited by Andy Barter G8ATD

Andy Barter has edited the titles *The International Microwave Handbook* and *Microwave Projects*. In this second *Projects* volume, we see five chapters: Transverters & transmitters, Receive amplifiers, Power Amplifiers, Filters, and Miscellaneous.

All together, there are 27 articles in this compilation. The previous work *Microwave Projects* was published by the RSGB in 2003. RSGB has once again published this second compilation. The editor, Andy Barter, is also the publisher of *VHF Communications* magazine.

It is my understanding that most of the articles published in *VHF Communications* have previously appeared in the German-language magazine *UKW Berichte*. It is therefore not surprising to see that many of the articles in this volume have appeared in *VHF Communications* over the past couple of years. However, even for a reader such as myself who subscribes to *VHF Communications* and *DUBUS*, there is new, to me, material in *Microwave Projects 2*.

Chapter 1 provides two elegant single board transverter designs: one for 23 cm band with 1 dB Noise Figure (NF) and 500 mW of transmitter output (sufficient to drive higher power amplifiers) and one for 13 cm band with 0.8 dB NF and approximately 1.3 W on transmit. The chapter also includes a description of a PLL controlled ATV transmitter for 10 GHz, including microcontroller module to set the transmit frequency.

The receive amplifier chapter (chapter 2) describes six such amplifiers, covering the 23 cm, 6 cm and 10 GHz amateur bands, as well as one unit with coverage from 800-2000 MHz with sub 1 dB NF and a broadband MMIC which delivers 0.8-1 dB NF across 30 to 2600 MHz range.

The third chapter covers power amplifiers. It includes two designs for 23 cm: a high-power unit (approximately 500 W, when water cooled) using two

GI-7BT triodes, and a 50 W solid state design. These designs are followed by two solid state amplifiers for 6 cm, delivering 500 mW and 4 W output.

The 3 cm band enthusiast will find a 1 W design giving 7 dB of gain, a 10 W single stage amplifier, with a gain of 6-7 dB, and a two stage amplifier delivering 10 W output. Next follows a 1 W amplifier for 24 GHz, previously published in *DUBUS*. For those readers who think that all this "microwave stuff" is esoteric enough, then you will find the final article in this chapter will confirm your thoughts: it discusses techniques for combining power at 76 GHz.

Two articles describe the design techniques required for low pass filters and examples of construction of the filters, one using coaxial construction and the other using microstrip techniques.

The final chapter ("Miscellaneous") covers using YIG oscillators, microwave absorbers, an inexpensive 12 to 24 GHz doubler, the designation of microwave bands and associated dimensions (including waveguide dimensions), a low power RF wattmeter for use in the 1-1000 MHz range, and a universal PLL oscillator module usable in the frequency range 2-7 GHz.

Similar to his previous microwave text compilations, *Microwave Projects 2* is a useful collection of articles which describe recent projects from amateurs across Europe, with one contribution from the US.

It is interesting to note that only one UK amateur appears in this RSGB publication. The text is easy to read, although there are a few typographical errors nothing serious though. There are two aspects that I do find disappointing. As occurred in *Microwave Projects*, many of the circuit diagrams are virtually unreadable: the line and text definition is poor, with some having grey areas



of shading in parts of the figure. In addition, many photos have reproduced poorly.

They are dark and lack tonal range and contrast. In many cases, one can only decipher vague outlines of the devices photographed and little if any detail. These faults may be, in part, due to the variety of sources used for the book material.

They certainly show that, apparently, little care was taken in preparation of the graphical material prior to publication and inadequate quality control at the printing stage. The impression that I have is that much of the graphic and photographic material may be second or third generation.

However, a saving grace is that several articles are now also available on various websites, especially the projects by French authors.

This 216 page book was published in 2005 and would be a useful addition to the library of any amateur interested in microwave communications. It is available from the WIA Bookshop for \$52.00 plus postage (WIA member price).

A domestic "search and destroy" mission finds the RFI source in the universal trouble spot - the son's room!

I recently had a spectacular case of mains-borne RFI. The problem showed up when I was trying to make phase noise measurements on equipment, and consisted of bursts of RF at the peak of each half-cycle of the 240 V AC waveform.

Yes, the interference was so bad I could easily see it on the scope, via stray pickup! It showed up as a series of damped oscillations with an estimated frequency near 2 MHz.

I then searched for it with a receiver, and sure enough found it centred at 1.98 MHz. It also had various strong sidebands over several hundred kilohertz. It sounded very similar to "motor commutator" noise bursts, but the frequency distribution was not broadband. The next problem was to track down the source, which I guessed would probably be a switchmode supply. As we run off our own pole sub (local transformer from 22 kV), it was more than likely the interference came from our house.

In the past, I have found that using a 'sniffer loop' with a handheld receiver can be very effective. The advantage of the loop is that it reacts mainly to the magnetic field of the interference currents, and it is much easier to localise the source of the interference than using a whip antenna.

I just made up a stack of adapters (banana post to BNC, then BNC to SMA for the VX-5R) and connected a clip lead as a simple loop antenna. I then went hunting - holding the loop near any conductors, cables, and so on to get an idea of the amount of interference current flowing. (This technique is also very useful, with a suitably small loop, for tracking down and silencing the causes of noise in other equipment).

The main problem was that the interference was so strong, it showed up in virtually every conductor in and near the house - even the cables from the tower! Eventually I found that the interference was very strong near a computer network server which has network cables to several rooms of the house, one of which had more noise than the rest. I soon traced this back to my son's bedroom where he was using his computer.

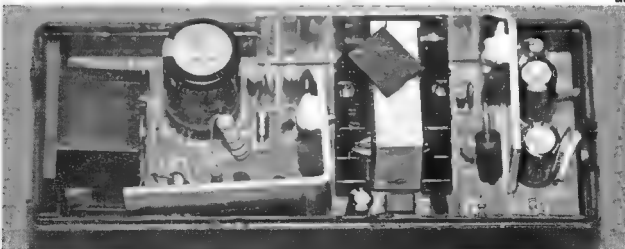
When asked, he shut down his computer, and the noise reduced dramatically but did not go completely. To prove the point, I turned off power to the house and the remainder disappeared. We then powered up his computer again and checked all of the peripherals. It did not take long to find that he had a couple of backup disk drives connected to the main computer via the USB port, and the noise was coming from the small power supply for these.

On further investigation, I found that with no load on the supply, there was not much noise, but while the disk drive was starting up or active, the noise got much worse. In addition, the noise seemed to be being differentially injected into the mains power input and the DC output - both had very high levels of noise current.

Breaking open the plastic case of the power supply revealed a small switchmode supply - with no interference suppression of any sort. There were not even any chokes in the DC output - just two diodes and a capacitor (forming a full wave biphas rectifier) in the +5 V supply, and a single diode and capacitor (half wave rectifier) in the +12 V supply. There was absolutely no suppression on the primary side, either. About as crude as it gets! The power supply, although purchased in Australia, was made in China (where else?) and did not have any C-tick or other compliance markings.

I tried installing an X-rated capacitor across the mains input and ferrite chokes in the input and output leads, but these made very little difference. The cure in the end? Chop the output cable from the device (to salvage the connector plug) and wire up an adapter to plug into the internal computer disk drive power connections, to pick up +5 V and +12 V from the computer itself. Result - golden silence!

The nasty thought is - I wonder how many of these el-cheapo power supplies are distributed across Australia, all contributing to the electromagnetic fog on the lower bands?



Internal view of the nasty, noisy power supply (no discernable brand name, but does have the model number GXP34-12.0/5.0-2000). Note the total lack of any RFI suppression!

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WANTED NSW

YAESU FT-902 in excellent condition, also accessories to make complete line up including speaker, VFO, tuner, transverter and FL-2100Z if available. Cash buyer. Thanks. Mike VK2OT guzziv10@bigpond.com

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VK5JST Antenna Analyser assembled and tested (see AR article May 2006) \$120.00. Can email a photo if required. Thanks Roderick Wall VK3YK, 0413 074 386 vk3yc@wia.org.au.

WANTED VIC

Manual for AWA audio-ultrasonic test set type MTS A21. Cover cost. Craig VK3CMC QTHR 03 5342 2448

Antenna book. "HF Antennas For All Locations" by Les Moxon G6XN, ISBN 1-872309-15-1. Thanks Roderick Wall VK3YK, 0413 074 386 vk3yc@wia.org.au

FOR SALE QLD

One (1) MFJ-284 1.5 kW HF-UHF dummy load. Brand new and never been used. \$100.00 firm. Contact VK4DV yahoo.com.au 07 4928 5537 (nights preferably) or vk4dv@yahoo.com.au

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VK5JST Antenna Analyser kits (see AR article May 2006). How electrically efficient are your HF antennas? Find out by building this great Analyser; measure and improve your 'on-air' performance. For more details see www.scarc.org.au, contact SCARC PO Box 333 Morphett Vale SA 5162, or email, kits@scarc.org.au

WANTED SA

GE CG-48116 resolver. Part of RAX-1 system. Receiver covers 1.5 MHz to 9.0 MHz. Any condition. Also wanted, Australian Sound Systems V5 amenities Rx in any condition. Andy VK5AAQ QTHR andyglu@nipper.com.au

HEATHKIT HW-9 transceiver (working or non working). Speaker type 1D13503 to complete a WW 2 3BZ receiver. Malcolm Haskard VK5BA QTHR, Ph 8280 7192, email mhaskard@chariot.net.au

WANTED TAS

JRC NSD-515 transmitter and connecting cable for operating the receiver. Will consider complete Tx/Rx from the above model onwards. Also want an RCAAR88 receiver. Please email me or phone 03 6239 0413, email annawilson0@hotmail.com VK7HO QTHR



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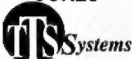
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Broadcast details

VK1 VK1WIA: Sunday 0900 local on the Mt Ginini repeaters 146.950 and 438.050 MHz. The UHF repeater requires 123 Hz access tone and is linked to the Goulburn repeater.

VK2 VK2WI: Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147.000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning..

Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.

VK3 VK1WIA: Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.133, 147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 4339.800 VK3RMT Mt St Leonard.

VK4 VK1WIA: Sunday 0900 local via HF and major VHF/UHF repeaters.

VK5 VK5WI: Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975

VK6 VK6WIA: Sunday 0900 local, on 1.865, 3.582, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120, 50.150, 146.700 and 438.525 MHz. Country relays on 3.582 MHz and major repeaters. Repeated Sunday, 1900 local, on 1.865, 3.565, 146.700 and 438.525 MHz. Country relays on major repeaters. Also in 'Realaudio' format from the VK6WIA website.

VK7 VK7WI: Sunday 0900 local, on 1.840 AM and 3.570 MHz and on major repeaters. VK7 regional news follows at 0930 local, on 7.090 and 14.130 MHz, and on major repeaters.

VK8 Sunday 0900 local, on 3.555, 7.050, 10.130 and 146.900 MHz.

Note that many clubs broadcast the WIA News via local VHF and UHF repeaters.

Check the News section of the WIA website.



Tony Hutchison receives Chris Jones Award

Michael Owen VK3KI

Tony Hutchison VK5ZAI is the WIA/ARISS Coordinator and ARISS Coordinator for the Asia Pacific Region.

Tony says that ARISS, Amateur Radio on International Space Station is a positive way of introducing our hobby of amateur radio to students, and others throughout the world by demonstrating how it is used to communicate with the crews on the International Space Station.

During the year eight schools in the region took part in scheduled link ups with the ISS crews, including three from New Zealand and the rest from Australia.

The value of Tony's contribution to amateur radio and the WIA was recognised by the presentation of the Chris Jones Award at the Open Forum.

The award is a handsome glass plaque and presenting the award to Tony, WIA President Michael Owen VK3KI read the inscription which is:

"The Chris Jones Award honours the memory of a man who was dedicated to the advancement of amateur radio and whose unfailing commitment and vision led to a new Wireless Institute of Australia and whose unfailing courtesy and genuine friendliness is fondly remembered by all who knew him."

Tony accepted the award, thanking all those who had supported ARISS.

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